

# COMPUTER

## THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

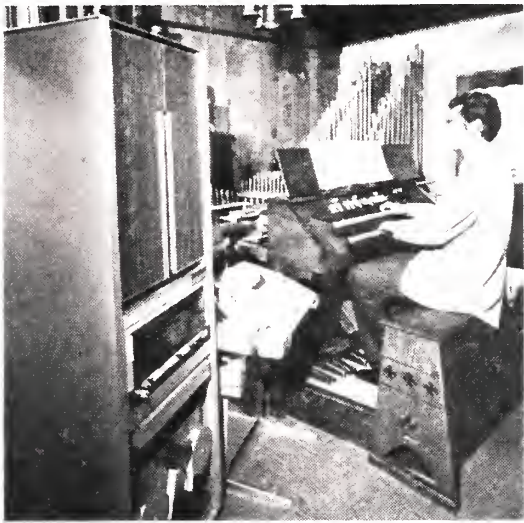
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### 'Just Mini and Me'

Dr. Prentiss H. Knowlton sits at the console of an organ he plays with the aid of a mini-computer. Knowlton, a systems analyst at the Jet Propulsion Laboratory, Pasadena, Calif., programmed the computer to simultaneously read instructions from a paper tape, analyze the music and then play it. Story on Page 2

### 'Misleading Advertising' Cited

## New Complaints Filed Against Six DP Schools

By E. Drake Lundell Jr.  
CW Washington Bureau

WASHINGTON, D.C. — Formal complaints alleging "misleading and deceptive" advertising practices were leveled recently against six computer programming schools by the Federal Trade Commission, in what appears to be a major FTC effort for reform in the area.

The formal complaints charged Lear Siegler, Inc., Electronic Computer Programming Institute (ECPI) and four ECPI subsidiaries (Chestkin Computer Corp., Boston; York Mountain Computer Corp., Salt Lake City, Utah; Data Processing Resources, San Jose, Calif.; and Electronic Computer Programming Institute of Fresno (Calif.), Inc.) with deceptive practices in their advertising.

Just three months ago, the commission leveled formal charges against another of the computer training schools, Control Data Institute.

When CDI was charged with "deceptive and unfair" advertising [CW, Oct. 31, 1973], William C. Norris, chairman of the board of CDC, said the company would "vigorously contest the charges in the commission's complaint."

CDI also asserted that it had "long since discontinued those ads," stating that some of them had not been in use for years.

All of the new complaints are drawn out of a long-standing FTC investigation of the advertising and placement practices of schools in the business of training computer programmers and other technicians.

A spokesman for Lear Siegler, Inc. said he was unable to comment on the complaint because the papers, which were

(Continued on Page 2)

## Clerk Wins Bid to Use Court System

By Patrick Ward  
Of the CW Staff

PARMA, Ohio — Walter Shipka, clerk of the municipal court, has won his battle with two judges who had ordered a halt to computerization of court records [CW, Jan. 23].

Court of Common Pleas Judge James P. Kilbane voided the judges' order and enjoined them from "interfering with the elected clerk of court... in the performance of his... duties."

Computerization shall be continued, Kilbane ruled, but the court clerk shall complete the computerized criminal disposition docket so that it is operational within 60 days.

The clerk shall also keep hand-posted parallel records of computerized records until the affected records are operational, the judge ruled.

And in the future the clerk shall confer with the municipal court judges when perfecting other computerization plans, the judge added.

Kilbane said he found that Shipka's four-stage program has been "well-designed and programmed and computerized and is of great assistance to the operation of the Parma Municipal Court."

(Continued on Page 4)

## 'Competition Condemned' By Telex Ruling, IBM Says

By E. Drake Lundell Jr.  
Of the CW Staff  
(related story on Page 29)

DENVER — The decision in the Telex vs. IBM case "leaves no room at all for fair competition" in the computer industry, IBM said in its appeal of the decision filed with the Federal Appeals Court for the Tenth Circuit here recently.

The major thrust of IBM's argument against the judgment in the antitrust case was that Judge A. Sherman Christensen, who set the award to Telex, "condemns the competitive system" in his decision.

In addition, IBM argued the findings of fact in the case do not support the argument that IBM held monopoly power in the industry. IBM also claimed its practices were not predatory and that the market was not defined properly by Christensen in his decision.

IBM argued that "the entry, growth, product improvement and price reduction described by (Christensen) as characteristics of this industry are exactly what competition is supposed to produce."

Furthermore, the appeals brief stated that "the findings in this case describe precisely the lowering of prices and improvement of product quality in an industry that is vital to the nation's security, health, education and economic well-being."

"This happened because the computer

business is intensely competitive, but the district court's decision condemns the lowering of prices, deters product improvement, fosters inefficiency and ensures injury to consumers," the brief added.

"In short, the district court condemns the competitive system," the IBM lawyers declared.

No Defense

"IBM was held to be predatory because" (Continued on Page 4)

## 25% Thicker Tape Said to Eliminate Most Edge Wear

CW West Coast Bureau

SANTA CLARA, Calif. — A thicker computer tape was introduced last week by Memorex Corp., which claims the product "virtually eliminates edge damage."

The tape, named Cubic, is said to be twice as strong as the average tape available today. Priced at \$17 per reel, the 2,400-foot-long tapes are 6,250 byte/in. certified and guaranteed against material failure for the equivalent of 70 years.

An informal Memorex poll of 1,000 DP departments indicated that edge damage was the leading cause for the retirement of tapes, leading all other causes 9-1, a Memorex spokesman said.

The new tape is 25% thicker than any generally available tape and therefore "twice as resistant to bending and side-load forces that lead to edge damage in use or storage," he noted.

Cubic is less expensive than Memorex's Quantum LCX tape but has a narrower (Continued on Page 2)

## Businessmen Need 'Action Plan' To Face Privacy Issue Head-On

By Marguerite Zientara  
Of the CW Staff

DALLAS — "The prudent businessman must recognize that there will be an information upheaval and dislocation of serious proportions within this decade," Robert L. McIntire, president of Data

Related stories on Pages 5, 6

Index, Inc., cautioned in a recent interview.

There are 20 bills in Congress today relating to computerized data banks and personal privacy and "there's no doubt in my mind that one will be passed this year," McIntire said.

Because of widespread strong feelings on the subject, McIntire feels businessmen must become aware of three ways in which industry is likely to be influenced by such legislation:

- "The decision processes relating to the what, when and how of file maintenance, file generation and file security will be controlled through regulations not made by company executives.
- "Those files which deal with individuals will be restructured.
- "Files which deal with statistics will be influenced by fallout during the re-

structuring process."

Information companies (credit bureaus, reference agencies, employment services, etc.) will be direct targets of privacy legislation, according to McIntire. They will suffer the most, since the entire purpose of such businesses is to maintain files on people who are not insiders in any respect, he said.

Within the companies to be affected, the computerized files most affected will include those of employees: qualifications of people; agents; sales representatives; customers; accounts receivable; consultants; recruitment prospects; dummy lists; credit references; deposit accounts; shareholders; income records; competition portfolios; and escrows.

Businessmen must now consider the possible new rules and regulations they will face in the future, McIntire said.

(Continued on Page 4)

### N.H. Is 'Freezing'

As part of his campaign of frugality the New Hampshire governor has instituted a hiring moratorium on all new state employees unless personally approved. And the state legislature has sued the governor on the legality of the freeze. Hanging in the balance are 26 state agencies which are dependent on the Centralized Data Processing staff for their DP needs, and without help from more personnel the logjam could get worse. Story on Page 7.

### On the Inside

Used 30s, 40s Seen Harder to Sell —Page 21

CDC, NCR, Honeywell DP Strengthen Earnings —Page 29

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### Univac May Up Prices

BLUE BELL, Pa. — Univac has applied to the Internal Revenue Service for price increases that will range from an average of 2% for rental of systems and equipment to about 5% on maintenance contracts. Purchase prices will be increased an average of 5%.



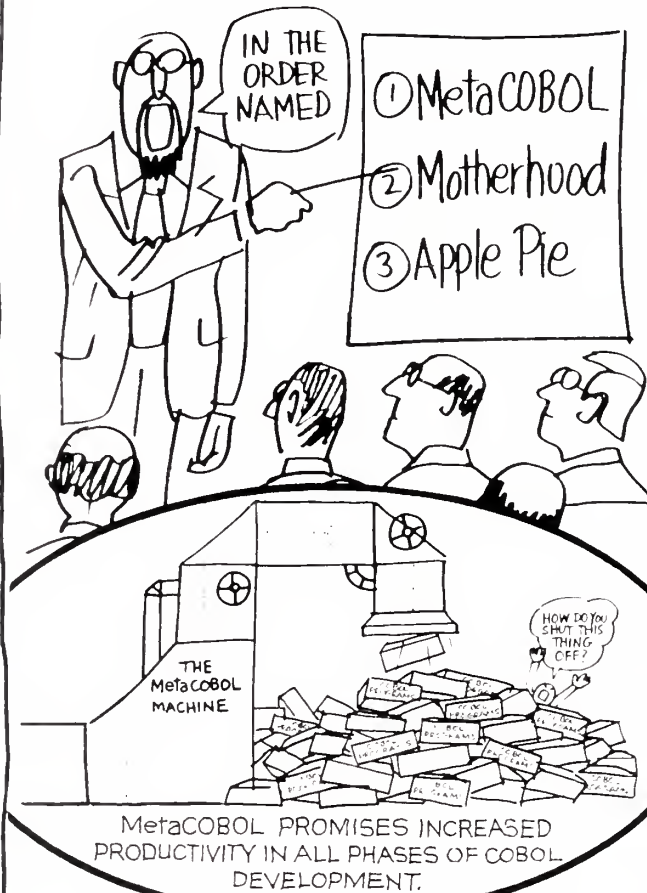




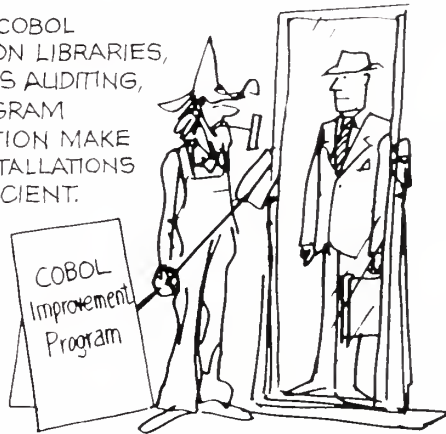
# Did You Know?

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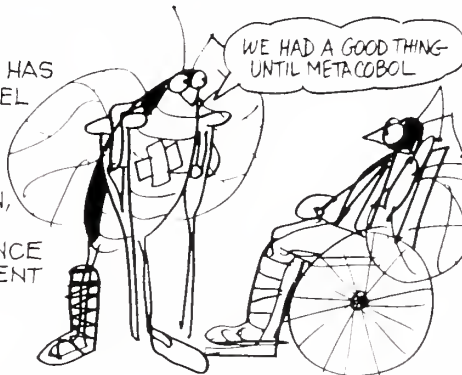
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## Breakthrough In COBOL Productivity Claimed

PRINCETON, N.J. — According to an ADR spokesman, MetaCOBOL is proving to be a breakthrough in computer programming. Not only does MetaCOBOL improve the productivity of a COBOL programming shop by over 50%, but if used properly, the reliability of the programs themselves increase significantly. According to ADR, however, installations must be ready to devote manpower to supervise the use of MetaCOBOL. Making the commitment today will bring significant and immediate savings—but most importantly will prove to bring even greater savings during the life cycle of the applications involved.

ADR states that MetaCOBOL's macro facility, besides being able to generate COBOL statements, can be used to analyze programs as well. Thus, ADR has developed macros which check for standards conformance, evaluate COBOL source code for efficiency, and audit source code for illegal statements. These macros, which are supplied in source form, can be user-customized to fulfill the requirements of a particular installation. The macro facility, plus the test data generator, debugging, and measurement options make MetaCOBOL a unique system for significantly improving COBOL productivity and reliability.

## New Brochure Presents "The Age of MetaCOBOL"

PRINCETON, N.J. — The auspicious sun signs in the lives of data processing people under the ascendant influence of MetaCOBOL are depicted in a colorful new brochure available from Applied Data Research, Princeton, N.J. Its title is "The Age of MetaCOBOL."

Using capsulized zodiacal concepts as metaphors for the metapowers of MetaCOBOL, the new brochure is an unusual piece of literature on an unusual software product.

Complimentary copies are available on request to data processing professionals, just by filling out the coupon on this page and mailing it to ADR.

duce coding labor by 30-60%. ADR- and user-supplied short forms can be used for required COBOL words and phrases, for frequently-written Data- and Procedure-names, for name prefix expansion, and for redundant logical statements.

*New Verbs*, which can be written in place of redundant and often complex COBOL functions. Like standard COBOL verbs, MetaCOBOL verbs can accept any number of variables and can therefore generate optimum, data-dependent COBOL statements, work areas, and subroutines.

*Major Logic Generators*, which use interrelated sets of verbs to define major logical elements of a COBOL program such as report writing, file match merge, input validation, and, most important for today's technology, data-base interfaces.

MetaCOBOL is available under monthly or permanent license. For additional information on the MetaCOBOL Libraries, contact Applied Data Research.

## Immediate Economic Benefits Available to COBOL Installations With MetaCOBOL Libraries

PRINCETON, N.J. — Libraries of specialized functions, distributed to all MetaCOBOL users, are bringing immediate benefits to COBOL installations. These libraries (seven in all), which can be customized by the users themselves, are divided into two groups—The Program Development Library and The COBOL Utility Library. The Program Development Library contains abbreviations and extensions of the COBOL language to reduce program development cost and effort, while significantly raising the level of program clarity and maintainability. The COBOL Utility Library contains functions which are applied to existing COBOL programs for analysis, modification, and standardization of the source code.

The COBOL Utility Library consists of:  
*Standards Auditing*, which diagnoses common programming standards violations in COBOL source and produces standards summary reports. This function is a necessity for internal standards enforcement and a valuable technique for reducing maintenance costs.

*Source Program Optimization*, which highlights inefficient statements and data usage in COBOL source code and summarizes results. This procedure is valuable not only for COBOL optimization, but for COBOL programmer training as well.

*COBOL-to-COBOL Conversion*, which translates IBM Levels D, E, and F, RCA Spectra and Honeywell H-200 to

IBM DOS or OS American National Standard COBOL. MetaCOBOL allows for new features of compilers and operating systems so that your conversion will result in the efficiency you're seeking.

*Special Utilities*, which perform automatic level and paragraph numbering, mapping of record descriptions, and many other functions. These utility functions relieve the programmer of concern for many required standards and documents during program development, and can be reapplied following program maintenance.

The Program Development Library consists of:

*Short Forms*, which can replace the full COBOL text they represent to re-



# IBM Says Telex Decision Rules Out Fair Competition

(Continued from Page 1)

its prices came down," the brief said, adding that "IBM was held to have monopoly power because of short-term success arising from the introduction of innovative new products and was forbidden to defend itself by competing fairly when others replaced those products with lower-priced copies."

"The district court reached these profoundly anticompetitive results by adopting conclusions and characterizations which are at war with the district court's own findings," the brief said, asserting that the court's findings show "that IBM's price reductions and matching of competitive terms were legitimate and fair competition."

Furthermore, IBM contended that "the very meaning of competition is that one seller hopes and intends that by improving its price or its terms or its product it will attract more customers" and that through such "competitive battles resulting in innovation and price reduction the consumer benefits."

The brief added: "That is why the antitrust laws exist. But the district court condemned IBM for doing the very things which it was supposed to do."

The decision in the case is in error in two basic ways, the IBM brief said.

First, "we believe the district court initially erred in assessing whether IBM had monopoly power over its peripherals by ignoring its own findings that IBM faces substantial and critical competition from the peripherals of other systems suppliers."

But even if the plug-compatible market definition argument is accepted, IBM said, the court "never even analyzed whether IBM met the legal test of monopoly power," that is whether it could charge unreasonably high prices and exclude competition.

"Its findings show IBM has no such power," the brief said.

"Second," the brief continued, "the court's characterization of IBM as 'predatory' and its holding that IBM's competi-

tive acts were unlawful was in error. In fact, the acts condemned are precisely what a competitor is meant to do. Therefore they do not, and should not, constitute the offense of monopolizing."

"IBM's intent was to be and to remain competitive. That necessarily means an intent to try to win competitive battles and it follows that competitors may lose

if IBM 'wins' unless, as here, the market expands and all competitors grow and thus share the fruits of that expansion."

"That will to win is not 'predatory.' Indeed, the motivation to win out over competitors by making one's offering more attractive is the principal business aim that makes the competitive system work."

## Business Needs 'Action Plan'

(Continued from Page 1)

As part of an action plan for industry executives, which addresses the question of privacy in business data banks, McIntire urged attendance at a meeting of the National Bureau of Standards to be held March 4-5, devoted to the subjects of security and privacy.

McIntire has prepared a 10-page report on last fall's conference at NBS [CW, Nov. 28], and the report is available from Data Index, Inc., 11300 N. Central Ex-

pressway, Dallas, 75231.

For those businessmen who want to face the privacy/security issue head-on and come out of it well-prepared, McIntire offered these suggestions for a "full action plan":

- Become aware of the trends and possible consequences to your own company and your industry.
- Collect your own bibliography on this subject and let your interests be known at industry and political levels.
- Establish a cognizance of this area somewhere in your company. This cognizance can be implemented now with senior individuals whose responsibility will be research and recommendations.
- Aim toward the development of a data management authority. Ultimately, recognize that the authority for file design, record control and output distribution can no longer rest with a computer programmer.
- In an ongoing manner, support the inquiries and develop the needed detail actions to maintain your firm in a creative posture, or at least in a responsive, reactive posture. Keep in mind that the new laws for occupational safety recently enacted created minimal interruptions compared with the bills now under consideration in Congress.

## Most front ends are built around a single idea. But it's the wrong one.

Every front-end but one uses somebody else's general purpose minicomputer. If you're just handling low speed lines and your system isn't going to grow, that's fine. But anybody who tells you a front-end built around a standard, off-the-shelf, minicomputer can handle bi-sync lines and still grow with your system is building castles in the air. And castles in the air cost a lot of money to keep up. Our CC-70 is built around a powerful processor we designed specifically for communications applications. It's the control element for our front-end and an entire family of communications processing systems, so that we can take you from a simple IBM 270X emulation to a turnkey, five-processor message switching system.

And because communications processing involves a lot more than a mini, we made the CC-70 flexible enough to handle a mix of communications lines and transmission rates, different line disciplines, and a variety of remote terminals. What's

more, since hardware and software elements are modular, the CC-70 can be modified whenever the configuration of lines and terminals is changed.

We built the CC-70 to handle a lot of BSC at very low cost, plus a lot of low speed lines. And we can prove it. We built test equipment that exactly measures throughput of data running through the system. We can provide dynamic, analytical formulas to show you how much computer you've got left when you load up your network on our machine. No one else can do that. And if our word isn't good enough, ask Commonwealth Edison, Eastern Airlines, the Midwest Stock Exchange, the State of Tennessee, Exxon, Mobil, Shell, and a lot of other users.

If you're tired of people telling you how to run a vast operation with half-vast front-ends, if you're tired of people who don't know the difference between imagination and fact, give us a call. We were Computer Communications before most people knew there was such a thing.



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## Clerk Gets OK to Use Court DP System

(Continued from Page 1)

Further, he found, "There was no creditable evidence adduced by the defendants [the judges] that the plaintiff... has not kept records required by law..."

Presiding Judge George W. Spanagel and Judge Gertrude Polcar, who have appealed the decision, had ordered a halt to the program on Nov. 16, charging that computerization caused "great inconvenience, didn't do what it was supposed to do and was in questionable compliance with legal requirements."

Shipka took the two judges to court, asserting that their move was a power play to take authority from his office.

The court clerk had been running a four-stage computerization program since January 1973. The programs included an alphabetical listing of all cases to speed up tracing of information and open warrants listed alphabetically and geographically to allow police to serve three or four warrants at a time for a given area.

There was also a daily traffic docket listing the names and offenses of those scheduled to appear in traffic court.

A criminal disposition docket that had been running only on an experimental basis in parallel with manual recordkeeping, contained information from the traffic docket plus disposition of the case and other data.

Although this computerized docket had not been approved by state auditors as the official record, the Parma judges charged that Shipka had actually been relying on it since early 1972 and had not been keeping the official manual records up to date.

While the Parma judges had complained they were not properly informed of Shipka's computerization plans, Kilbane found that judges Spanagel and Polcar were apprised of Shipka's plans in early 1972, according to Shipka.



# Ohio Privacy Bill Emphasizes Consent of Subject Individuals

By a CW Staff Writer

COLUMBUS, Ohio — A privacy bill which allows automated personal data systems to contain information only on persons who have consented to be included has been introduced in the Ohio State Legislature by Sen. Stanley Aronoff, who served on the H-W Secretary's Advisory Committee on Automated Personal Data Systems.

The bill, if passed, would become law on July 1, 1974, and would prohibit the transfer of manually kept "individually identifiable personal data" without the prior informed consent of the subject, if such data will become part of an automated data system exempt from safeguard requirements.

The bill also specifies that data systems may contain information only on persons who have consented to be included.

In addition, each person maintaining an automated personal data system must:

- Identify one individual immediately responsible for the system.
- Inform its employees of each safeguard required by law pertaining to the system.
- Specify disciplinary measures to be

brought against any employee who initiates disciplinary action against someone who publicizes evidence of unauthorized use of information in the system.

- Take reasonable precautions to protect data in the system.
- Make transfers of individually identifiable personal data to another system only after determining accuracy, security, consent of subjects and the existence of access records.

Violators of the articles mentioned above will be guilty of a misdemeanor of the first degree, according to the bill.

Aronoff, currently a candidate for the office of state attorney general, will speak on the subject of "Computers and Personal Privacy" on Feb. 26 at a lecture in Cincinnati. The lecture is sponsored by the Greater Cincinnati Chapter of the Association for Computing Machinery and will begin at 7:30 p.m. at Stouffer's Cincinnati Inn.

# Mass. Pushes for NCIC Petition Support

BOSTON — Massachusetts Gov. Francis W. Sargent has launched a statewide drive for support of a petition which would force the establishment of privacy safeguards for the FBI's National Crime Information Center (NCIC).

"The purpose of the petition is to show that the Commonwealth of Massachusetts is behind this, that the governor truly represents the people," according to Andrew Klein, an aide to Sargent and one of the coordinators of the drive.

The petition, initiated last August [CW, Aug. 15], addresses both computerized and manual data systems within NCIC and asks the federal courts to require the Justice Department "to adhere to constitutional guarantees to protect personal privacy and other rights and civil liberties in the operation and control" of the NCIC.

The petition, originally filed against then Attorney General Elliot Richardson and FBI Director Clarence Kelley, lay dormant after Richardson said last fall that privacy regulations were being prepared by the Justice Department. At that time, the petitioners allowed the October deadline they had set for action to pass. The drafting effort, however, apparently stopped when Richardson left the department.

Late last month the petitioners gave the new attorney general, William B. Saxbe, until Feb. 22 to prepare the safeguards. Klein said he did not think the safeguards would be prepared in time and "I think we'll have to go through with a suit."

If the safeguards are not drafted in time, "that will be the basis of the lawsuit," Klein said. It will be filed in Federal District Court, probably in Washington, D.C., at the end of February or the beginning of March, he said.

# Did Salt Lake County Get What It Paid For? Officials Wondering

By Patrick Ward and Marvin Smalheiser  
Of the CW Staff

SALT LAKE CITY, Utah — Officials at the Salt Lake County DP add-on memory to a two-year-old computer, although they reportedly believed the original system would be sufficient for 10 years' work.

Before the 256K IBM 370/145 was purchased, Salt Lake County attorney Carl J. Nemelka reportedly pushed for a systems study outlining the county's DP needs, but no such study was done.

Local newspapers have quoted Nemelka as claiming IBM salesmen indicated the 145 would be sufficient for 10 years' work, but Nemelka has been unavailable for comment. IBM said no such claims were made.

Local sources could not explain why Nemelka's recommendation of a systems study was never approved.

Meanwhile, county attorneys are studying the original contract to determine "whether we got what we paid for and if we didn't, should the price have been something less," said John Avery, a lawyer in the county attorney's office.

"There's a kind of dearth of correspondence floating around on the point," remarked Avery, adding that several persons involved are no longer in county government.

DP director Dale S. Perry said he wants the extra memory, which will be acquired from Cambridge Memories, Inc., to cut down user response time and to add capability for extra terminals.

"At times during the day when we're running heavy batch as well as TP, we feel the user response time is not as fast as is reasonable," Perry stated.

"I'd say anything greater than 10 seconds is not satisfactory," he said, adding that five seconds would be a more satisfactory figure, depending on the application.

Perry said the county has not implemented any applications or packages that would vastly increase core usage. And although more applications are being put on, these are within past projections, Perry said. When the county first acquired the 370/145 it was operating under OS, but a switch to VS was made about a year ago, Perry noted. The move to VS was not a major contributing factor to the need for more core, he added.

# ONE DAY SEMINARS FOR THE PROFESSIONAL

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This seminar brings together in a one day session a collection of the techniques and management practices used by the senior executives of the largest and most successful Information System Departments in the country.

### TOPICS

- Department Organization
- Selection and retention of qualified personnel
- Applied management techniques
- What to measure
- Productivity tools
- User interface
- Project approval/prioritization
- Project management
- Are your systems used?
- How do your expenses compare?
- Technical support functions
- Security and back-up

### WHO SHOULD ATTEND

- Managers/Directors, Vice Presidents of Information Systems
- Managers of Systems and Programming
- Managers of Technical Support Groups

## RESOURCE BILLING, CONCEPTS, TECHNIQUES, SYSTEMS OBJECTIVES

This seminar covers the concepts and application of Resource Billing to the typical OS/VS computer installation, various techniques as well as systems and software packages will be discussed. The disciplines learned in this course will be useful if you:

- Plan to charge user departments for computer services
- Anticipate selling computer services to outside customers
- Want to better measurement tools to more effectively manage the computer resource

### TOPICS

- Resource Billing concepts
- Measurement of resource units
- Cost pools
- Development of unit rates
- Survey of Billing Systems
- Implementing a Resource Billing System
- Administering the Resource Billing System

### WHO SHOULD ATTEND

- Technical Support personnel
- Computer Operations Management
- Managers, Directors, Vice Presidents of Information Systems

## OPTIMIZING COBOL PROGRAMS OBJECTIVES

Upon completion of the seminar the participant should be able to organize an optimization project, select and use the appropriate tools and techniques, and measure the results achieved.

### TOPICS

- Introduction to OS/VS ANSI Compilers
- Defining Objectives of an Optimizing Project
- Collecting and Using Measurement Statistics
- Selecting Programs to be Optimized
- Balancing the Optimization effort
- Optimizing Techniques
- Survey of Software Practices
- Guideline for more efficient programs
- "Virtual" Optimization Considerations and techniques

### WHO SHOULD ATTEND

- Application programming personnel
- Technical support personnel
- Programming and Project managers

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| NEW YORK CITY    | May 8 <input type="checkbox"/>   | May 9 <input type="checkbox"/>   | May 10 <input type="checkbox"/>  |
| ST. LOUIS        | May 15 <input type="checkbox"/>  | May 16 <input type="checkbox"/>  | May 17 <input type="checkbox"/>  |
| DETROIT          | May 29 <input type="checkbox"/>  | May 30 <input type="checkbox"/>  | May 31 <input type="checkbox"/>  |
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| CLEVELAND        | June 19 <input type="checkbox"/> | June 20 <input type="checkbox"/> | June 21 <input type="checkbox"/> |
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## How About a Federal Board?

## Or Let the Attorney General Handle It?

# Ervin, Justice Privacy Bills Split on Enforcement

By E. Drake Lundell Jr.  
U.S. Washington Bureau

WASHINGTON, D.C. While the two privacy bills introduced in the Senate here [CW Feb. 13] run on roughly parallel courses on many major points, they differ considerably on the question of administration.

Both measures, one developed by Sen. Sam J. Ervin (D-N.C.) and the other introduced by Sen. Roman Hruska (R-Neb.) for the Justice Department, strictly restrict the dissemination of arrest information, provide individual review of records and establish civil and criminal penalties for violations.

However, the Ervin bill, called the Criminal Justice Information Control and Protection of Privacy Act of 1974 (S-2963),

would establish a federal-state administrative body to enforce many of the rules, and which in fact could take over the operation of the interstate systems for the exchange of criminal arrest information.

On the other hand, the Hruska bill would leave most of the power for overseeing the systems and establishing regulations on them in the hands of the attorney general, permitting him to make significant exceptions to the regulations in the name of national security—a phrase that may have been overworked in the current Watergate situation, according to many observers.

Under the Ervin measure, which is a clever blending of many of the past proposals in the area from the National Academy of Sciences report to the recent Law Enforcement Assistance Administration report on the subject and even the original Project Search studies, a Federal Information Systems Board would be established.

The board would be "an independent agency with general responsibility for administration and enforcement of the act."

It would be composed of a representative of the Department of Justice and two other federal agencies plus six public representatives appointed by the President and subject to Senate confirmation, at least three of whom would be representatives of the states and three from the general public.

The board "would have the authority to issue general regulations applying the act's policies" and "it could operate the Interstate Information System" authorized under the bill.

The board would conduct audits of the existing federal and state systems on a regular basis as specified in the act to make sure that all of the provisions of the bill would be carried out and that its regulations were obeyed by the state agencies.

In addition, the Ervin measure would establish an Information Systems Advisory Committee made up of representatives of each state to advise the board and "in particular provide advice on the board's operation of the Interstate Information System."

In addition, while the Hruska measure places the operation of

## How (In)sensitive Are the Sensors?

CHICAGO—Highways can be long roads, but did you ever think of one as a potential insurer of your personal privacy?

Chicago expressways include electronic sensors buried in the highway at half-mile intervals to measure traffic flow. According to *Cable Report*, however, if every automobile had a tiny transmitter, Chicago's traffic computer could identify every car—perhaps by license number—as it sped (perhaps too fast) down the Dan Ryan Expressway.

The report further pointed out "when Chicago finally gets a cable, the traffic system could be expanded anywhere the cable goes."

the state information systems under the control of a criminal justice agency (which means police in almost every instance), the Ervin bill would require the states to "establish a central administrative agency, separate and apart from existing criminal justice agencies, with the broad authority to oversee and regulate the operation of criminal justice information systems in that state."

If states did not establish such agencies within two years of the enactment of the bill, they would not be allowed to interconnect with any federal system in existence at that time.

The Ervin bill is also very foresighted regarding the operation of the Federal Information Systems Board, which is perhaps why it is given such a wide-ranging nomenclature in the bill.

The board, in addition to regulating and overseeing the activities of the Federal Government and the states in the area of criminal justice systems, would have "authority to conduct general studies of information systems and make recommendations to the Congress for additional legislation" for controlling other federal data bank operations.

The two bills adopt only one provision from the recent and much ballyhooed H.W. Secretary's Advisory Committee on Automated Personal Data Systems in that they require all information agencies maintaining such systems to publicly disclose their existence and to issue annual reports about their operations including the type of information held on individuals.

While the Hruska bill would allow some noncriminal justice agency use of the records in such files where authorized by federal or state statute, it also contains an interesting provision that would require an individual to be notified that such a use was to be made of the information beforehand so that he could see his record and challenge it before it was sent to a noncriminal justice agency.

Both senators agree that the proposed bills are not yet in final form and expressed feelings that they would be modified after hearings are held on the measures—with the first round of hearings scheduled to begin the first week of March.

But while both indicated the measures may have to be modified as the result of the hearings, they both felt a privacy bill cov-

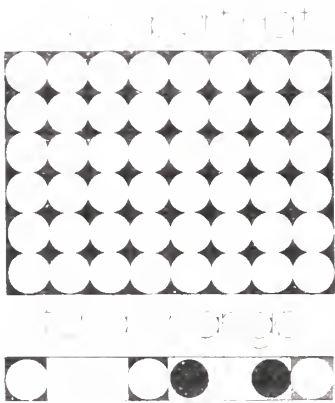
ering the operation of such systems would definitely be forthcoming during this session of Congress.

## Conn. to Draft Privacy Law For Crime Data

HARTFORD, Conn. Following the recent leads of several states, the Connecticut Personnel and Administration Department will begin drafting legislation to guarantee the privacy and security of its planned computerized state criminal justice information system.

The state Planning Committee on Criminal Administration awarded the department an \$8,125 grant for work on the statute to be submitted to the 1974 General Assembly for action.

H.R. Sterrett, executive director of the planning committee, said: "We intend to guarantee the legal rights, privacy and security of those persons included in a criminal justice information system, while at the same time providing swift, accurate and current information to law enforcement agencies."



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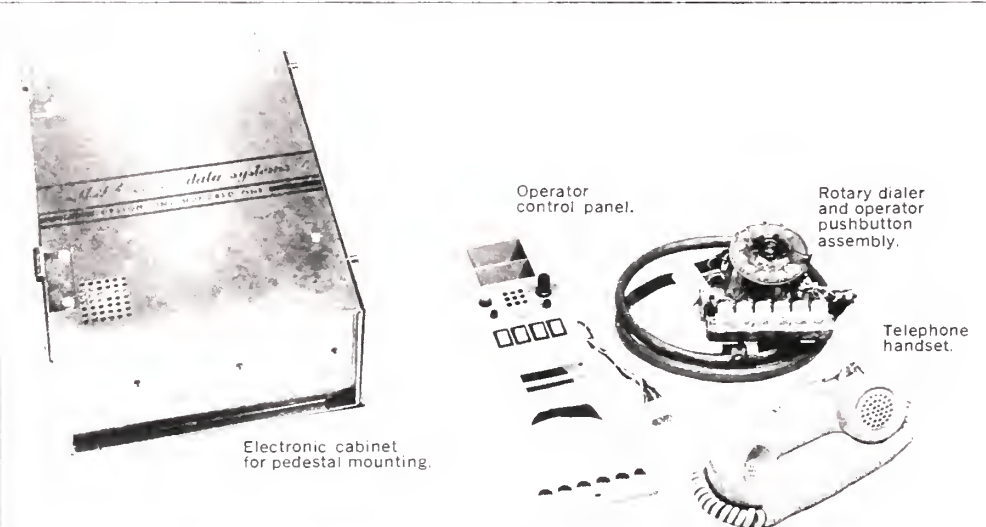
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## Legislature Sues Governor Over Moratorium

# Job Freeze Imperils State Agencies' Effectiveness

By Ronald A. Frank  
Of the CW Staff

CONCORD, N.H. — While many states are struggling to establish centralized data processing operations, New Hampshire is unable to effectively implement a central DP framework which has been in operation for several years.

The reasons for the state's DP foot-dragging are political, involving the governor's office on the one side and the Centralized Data Processing (CDP) staff on the other.

On the surface New Hampshire is better equipped than most states to service the DP needs of various agencies from a central source. The state has a large Honeywell 6060 computer which was acquired after study by the CDP Commission, which oversees the CDP operation.

### A Look

at

DP in N.H.

The main roadblock to continued expansion of CDP projects is the state's conservative governor, Meldrim Thompson, who is determined to save taxpayer dollars, even at the expense of idle CPU time. As part of his frugality campaign, Thompson has placed a moratorium on the hiring of all new state employees without his personal approval.

In all, 26 state agencies are dependent on CDP for their DP needs, and without additional personnel, the existing logjam could get a lot worse. Several of the CDP commissioners feel the governor is being penny-wise and pound-foolish. They point out the inability of CDP to carry out its projects is actually costing thousands of dollars by continuing reliance on outdated manual systems at the individual state agencies.

The hiring moratorium has placed the governor's office in direct conflict with the state legislature that had previously appropriated funds to hire 40 new CDP employees. And since last summer, the governor's office has allowed CDP to hire only five persons, most of them operators rather than the critically needed systems experts. The legislature has brought suit against the governor on the legality of the job freeze and the issue is now pending before the N.H. Supreme Court.

"We're just locked in where we are now," explained Arthur Hill, director of CDP. "In the present state of things our projects are four to six months behind schedule." And if the hiring freeze continues, Hill feels the required target dates to computerize various agency projects will fall even further behind.

One agency hit by the stalled CDP projects is the state treasurer's office. "We're still on a 402 card system which is bursting at the seams," Treasurer Robert Flanders said, referring to the state's payroll system.

Originally the computerized payroll system was scheduled for startup this month, but last summer the date was moved to next July. Another project for the treasurer's office that will shift all check reconciliations onto the CPU may also be delayed.

### Chairman Resigns

The feud between the governor and the CDP Commission has been smoldering for some months. Last September, the chairman of the commission, Stewart Lamprey, resigned because "I no longer care to serve in the present administration."

Replacing Lamprey was N. Edward Berg who apparently was chosen by Thompson because his conservative views coincide with the governor's. "We're working on this [CDP] organization to achieve efficiency, but we don't want to build a bureaucracy just because it's been authorized. If we hired these people and they did nothing, that serves no useful purpose," Berg said.

"We have to justify each person and

what they will be doing," Berg said. "The organizational structure of CDP has been changed from a functional to a line organization where a given project is given to one group instead of divided responsibilities which involved 'playing football,'" he added.

### No Authority

The chairman of the CDP Commission is appointed from the ranks of the commission by the governor and his council to serve for two years. But the law does not give the chairman authority to dictate his will, or the governor's, to the commission and/or the director, according to one commissioner.

At a recent meeting of the CDP Commission, the commissioners took issue with a statement from Berg that the hiring freeze had not hurt the operation of the DP department. Berg's statement

had been presented in defense of the governor to the Supreme Court, but the chairman said he had signed only a blank affidavit and others had filled in the views attributed to him.

The CDP Commission issued a statement which said, "The hiring freeze has contributed in a significant way to the inability of the [CDP] department to provide state agencies with computer services..."

### Mexican Standoff

One of the positions affected by the freeze is the post of deputy CDP director. Hill has recommended Robert Strickland for the position and members of the CDP Commission have approved, but Berg and the governor have objected. And while the controversy continues, Strickland has been performing the duties of acting deputy director with the official title and

pay of manager of the CDP's System Development Division.

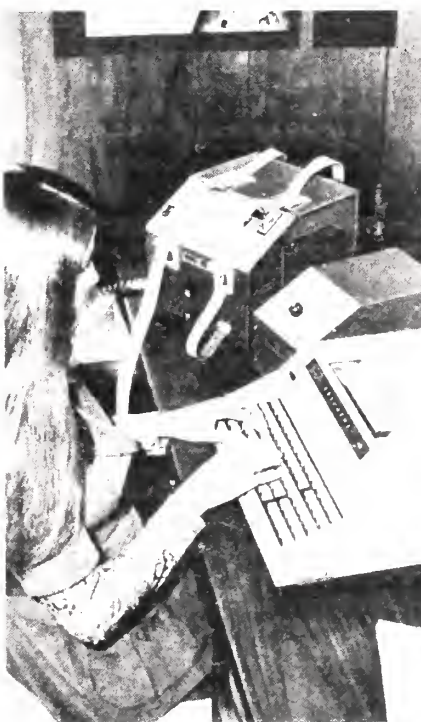
Some observers feel Strickland's appointment is the pivotal issue in what has been described as a "Mexican standoff" between CDP and the governor. Berg reportedly wants a technical expert in the deputy director's post and feels Strickland does not meet the qualification.

One source familiar with the situation noted, "We have to eliminate this political interference that is emanating from the governor's office." State agencies are not receiving the vital information they need to make day-to-day decisions, and unless new people are hired and new schedules are established, the problems will get worse, he predicted. "There's no reason to believe that as long as we have the present governor he will see the light as far as computers are concerned," the source added.

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## Editorial

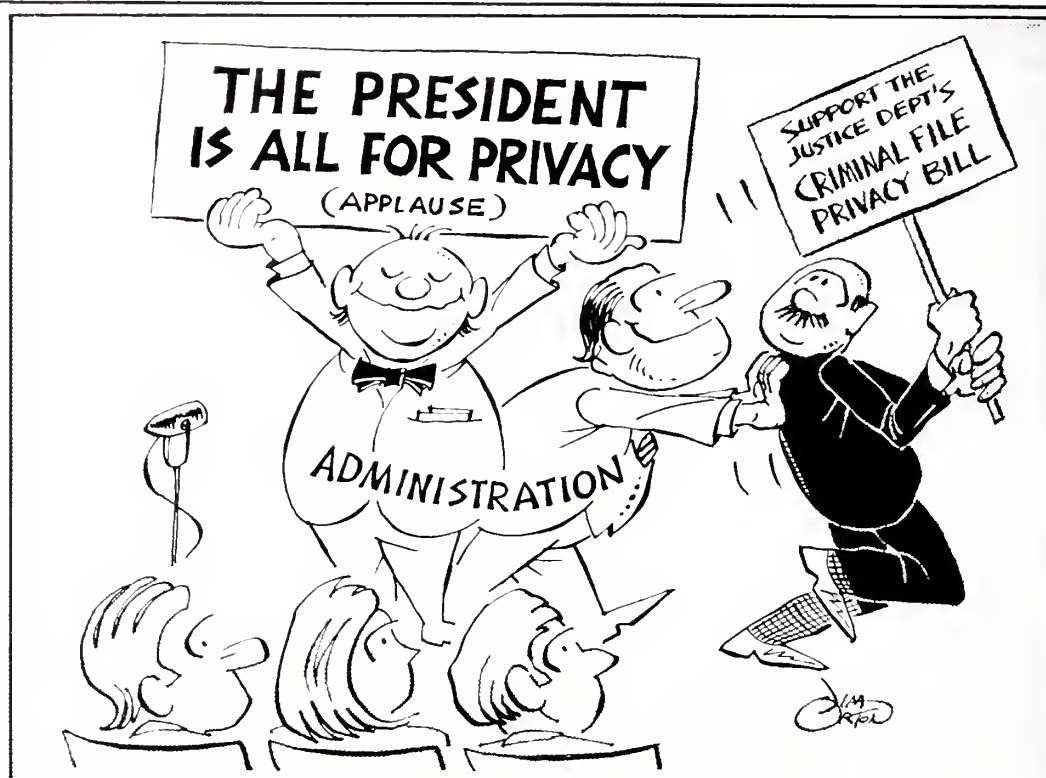
### Privacy Brings Problems

The problem of control of computerized banks is now before Congress. The Administration bill and the legislation being drafted by Sen. Sam J. Ervin Jr. will affect use of the Social Security Number, data inspection and correction methods, and interaction with other systems.

Already several states have passed or are passing laws significantly affecting the operation of both official and private data files.

We have advocated the protection of privacy for many years. We believe careful consideration of human rights and consumer needs will ultimately be seen as more important in systems design than sheer efficiency. This is the more obvious as technology makes the cost of such considerations steadily less.

It is vital that DP managers prepare their organizations for such changes. True, we do not yet know the exact form of new requirements, federal, state or industry-recommended — but the direction is clear. And in addition, some user organizations and manufacturers may want to influence the legislation before it is finalized.



## Letters to the Editor

### Some Horror Stories About a Free Computer

Re an article entitled "The Joy of Donating a Computer: All Benefit" [CW, Jan. 9]:

When I first read this article, I wished five years of bad luck to the author. Having read it through many times since, I now wish the author 10 years of machine language programming on Eniac (or go directly to that part of hell where people wire old 407 control panels). Articles such as this can set the progress

of computer education back a full decade.

I can't refute the tax advantages to the benevolent corporation. There is no doubt about that. But what about the recipient school? What happens to us? Here are a few horror stories from days past.

In its infinite generosity IBM offered a Model 1620 to schools for \$525/mo. This was a typewriter I/O system. For most schools typewriter I/O was too restrictive so they leased a card reader/punch, card punch machines, etc. By the time they

were done... the schools were paying \$1,000 to \$1,200/mo for an antiquated single terminal system at a time when DEC was already offering multiterminal PDP-8 for less money.

CDC sold the old G-15 computer to schools for a song. A few short years later the same schools found that maintenance fees on the system were so high they couldn't afford to get them fixed.

Two school districts (one on the West Coast, one on the East Coast) are presently leasing old GE 400 systems at a great educa-

tional discount. One problem: no one supports the software anymore so either they hire a software staff or "work around" the glitches that exist (kids won't cooperate in working around glitches!). [How about the glitches in real life? HG]

S-C-M blessed the San Francisco Bay Area Schools with a \$1 million tax write-off in the form of old clunking accounting machines, which they called computers. Schools gladly accepted them and then the roof fell in. Most of them didn't work! Finding someone to fix them was another story. Those that were working used some obscure language for which there was little or no documentation. Teachers set about to write instructional materials but little came of that effort when it was discovered how difficult the language was to learn.

What happened? Well, the electric typewriter and desk were cannibalized by enterprising teachers. The computer guts were sent down to the electronics shop where the whole mess should have started. But the really bad thing that happened was that when teachers approached their school boards for decent equipment the boards responded with "but what did you do with the computers those nice people from S-C-M gave us?" How do you convince a school board they were shafted by their friends in industry?

If the computer is truly outdated, then its greatest value is in the electronics class, not in the computer education program. There its guts can be investigated at little expense. If someone offers you one of these gifts, check out the following before you accept:

- Is a maintenance contract available? How much is it? Will the company commit itself to a three-year contract?
- What is the status of the software? Is it still supported by the manufacturer? Are the software systems available compatible with your needs and the offered configuration? Are there classroom-oriented instructional materials available?
- How much electricity does the beast need? (We just turned down a system that consumed

\$200 to \$300/mo in electricity after a rewiring job.)

- Do you need air conditioning? Chances are you do and that costs big bucks.

- Can you run the system in a classroom or does it need its own facility... and can you get one?

- Who will pay for moving the machine to your site?

- Most important — is this a good system to help you meet your teaching objectives?

By the time you add up all the costs to install and maintain the gift system you will probably find you would be better off buying a third generation system designed for educational applications. As a matter of fact, you should evaluate all gift computers in the same manner you would evaluate new systems.

LeRoy Finkel  
Menlo Park, Calif.

### The Bunk of Junk

I suggest that at least one reader missed the point of the article on "junk mail" [CW, Nov. 21]. In a fervor to make his "contribution to the age of ecological responsibility," this gentleman used a postage paid return postcard, sent to him as a convenience in a software sales campaign, to send a deck of blank punch cards back to us (wrapped, by the way, in a copy of the CW article!) causing a \$2.35 postage due bill.

Now, requesting to have one's name removed from a mailing list is fine. I not only agree, I encourage it and act upon it. I certainly have no desire to continue mailing to someone who is not interested in receiving it. But the attempt to get back at "junk mail" through this kind of action is not only ridiculous, the post office informs me it is fraudulent.

Or did I miss the point? Are you against direct mail marketing or against the use of a name given freely for one reason, being used for another?

John P. Horger  
Vice-President  
Dylakor Computer Systems, Inc.  
Los Angeles, Calif.

Seidel replies: The fellow who mailed you a blank deck is not playing with a full deck. I suggest you bill him for the \$2.35.

## A New Kind of User Group — III

There would be three levels of contribution to a vendor-independent, future-specifying user organization. At the lowest, associate, only interest would be necessary — and a modest annual membership fee. Installations could attend and offer suggestions at all major meetings, debate the actions of the executive committee, but not vote on substantive matters. Where to hold the next meeting, yes; who should design the 1978 machine, no!

Full members would be those organizations prepared to contribute major funding and heavy personnel effort to specifying a possible alternative to the major-supplier 1976 offerings, IBM and otherwise. The level of work would resemble that of a large corporate standards activity, and would in fact subsume DP standards work if any were already under way. For a large bank or a hotel chain or an aerospace company, the top DP managers would spend perhaps a third of their time on group work; there would be two or three full-time senior technical people and a half a dozen support people. Annual dues would be several thousand dollars (a fraction of the internal costs, of course). For a General Motors or a Unilever, the level of support would be much higher.

Full members would directly but not completely govern the technical work of the Group. The most important decisions would require unanimous agreement of executive committee members, and these third-level contributors would be selected by the full members subject to two major additional requirements: that they leave the executive committee if unable to agree with consensus views, and that they agree to ultimate support of the user group 1978 machine. That support would of course be prior and irrevocable com-

mitment to purchase a number of the production systems, and help contract for software. There would be perhaps 20 executive committee members.

The Group would employ a permanent staff of substantial size, and also contract with outstanding consultant firms and individuals. The primary task would be to specify the desired DP future, the fifth and sixth generations (1976-88), and work out the general architecture and performance of a hardware/software system — or more accurately, family — for that period. After specification, the Group (acting through the executive committee and the secretariat) would contract for detailed design with an Amdahl or a Cray or an overseas equivalent.

And after the detailed design was approved, the Group would contract for several dozen large-end-of-the-family systems with a Burroughs or a Hitachi or a Siemens. These would go to the executive committee, which had agreed several years before to buy them. Full members could of course contract for later systems, and associate members and outsiders would deal directly with the manufacturer.

*The next column will deal with the 1978 system in more detail.*



Herb Groosh



## Letters to the Editor

### Readers Discuss 'Political' Comment

#### Profession Needs Balancing Comment

I do not understand how people who claim to champion individualism and free competition can get so soppy over IBM and other large market dominators. Whether IBM's financial and market share success is due to pioneering technology, reliability of customer service, superior sales technique or aggressive marketing tactics of questionable legality is infinitely debatable.

To maintain any one of these reasons as *the* reason is probably wrong and, surely, for each one there will be those who claim IBM does not do that anyhow. When the smoke clears from this exchange of shots, the matter quickly transforms into philosophical debate. Too often the level of the philosophy is: big is bad vs. big is good, which buries the problem at issue. The problem is to define the conditions under which IBM and much smaller companies may compete fairly.

I don't care to decide, or to have it decided, whether IBM is good or bad. I rather agree with Judge Christensen's position that IBM should price *all* of its products separately and at the same markup above cost and provide them to customers without respect to how many other products are purchased or rented or third party leased.

Nor does it seem to me to be inappropriate to restrain IBM (or any other vendor) from making personnel recommendations to government officials or from giving any other potentially self-serving advice. Completely apart from arguments over whether IBM personnel have misconducted themselves in these ways in the past and whether such misconduct was in any way fostered by IBM, *are not these rules*

reasonable?

I would be interested to hear the reasoning of people who think they are not. These rules also have the advantage that they can be applied to everyone, not just unilaterally to IBM.

No, I don't think Herb Grosch (or anyone) should suppress right-wing comment (or any other flavor comment) - though I share his opinion of most of it. If it (or any other strongly stated position) doesn't generate a flow of balancing comment, we will know that we have died and all our hopes of growing into a profession are blasted.

Susan H. Lewis

Cambridge, Mass.

#### What to Publish?

You question whether you should suppress right-wing comment. Although you do not *specify* your reason for considering such a move, your statement suggests two possibilities: (1) you're at the other end of the political spectrum and are disturbed by these views, and (2) your mail is heavily unbalanced toward the right.

To whatever extent the first may be your reason, I would consider your suppression an attempt by you to (paraphrasing your statement) write off opinions as foolish and immoral when they get in the way of your economic/political prejudices, which I find quite distasteful, particularly in a publication not marketed as one man's view of the computer world. Note, however, that as an advocate of laissez-faire capitalism and property rights, I recognize the right of the owners of *Computerworld* to choose what they will or will not publish, subject only to proper libel laws.

Regarding your second concern, I think that an objective review of the letters, articles and interviews published in CW will

show that very few of the positions represented reflect a right-wing viewpoint. On the contrary, almost no one challenged the right of the government to dictate to a corporation the

In the Nov. 28 issue I asked for reader discussion about whether I should suppress right-wing comment, especially of the Ayn Rand or John Birch variety. The letters printed here are representative of replies received in two months. There was no "hate mail."

We will continue to print interesting letters from the right. I hope there will be balancing letters from the other wing. HG

terms on which it may do business and, indeed, even continue to exist.

Most of these people were merely haggling over the techniques for distributing the spoils and trying to eliminate IBM as a threat to their particular areas of competition. These views may not advocate the nationalization of IBM in form; actually, they are representative of a bedfellow of socialism - fascism: IBM should still be responsible for solving the problems of producing, but the government assumes the right of ultimate control.

A final point. You are reversing cause and effect when you say that the letters you referred to reflect a special perspective that considers a law immoral when it gets in the way of the writer's economic/political prejudices. In fact, a person's political views are based on the code of morality which he has chosen to accept.

Roy Sander

Philadelphia, Pa.

#### Leftist Is Puzzled

The increasingly brazen manipulations of the business oligarchy to repeal the Constitu-

tion of the United States is at least understandable in the context of their own (short-sighted, I believe) self-interest.

What puzzles me is the active, frequently rabid support this oligarchy gets from a sizable proportion of middle-class and blue-collar types. I was puzzled by the same phenomenon in the early 1930s by the same groups supporting Hitler. I find their attitudes and actions as obscene now as then.

It seems obvious to me that one of the soundest pillars of our system is the body of laws which has the effect of limiting power - political, economic, whatever. To our peril, we have too long ignored the concentration of political and economic power in our nation.

Let's have more regulation! And let's guard against the capture of the regulatory machinery by the regulated!

Of course, the *real* problem is the indifference of the majority of Americans to the erosion of principle and the triumph of manipulation and expediency.

I would hope that disgraceful recent events, as represented in Washington and by the oil barons, would charge up Americans to take back their stolen government - as they did under FDR - in the name of Life, Liberty and the Pursuit of Happiness!

J.W. Dees

Sacramento, Calif.

#### Readers Right Wing?

I see no reason why you should suppress right-wing or any other comments addressed to your newspaper.

I suggest that you publish approximately equal percentages of all opinions, representing the views of those that write you. The minority views, perhaps, should have slightly more than their share published, if there were a great disparity in the

proportions, so that they are not overwhelmed by sheer numbers.

It might just be that the majority of your readers is somewhat right wing. In that case, suppressing their comments might not be a viable alternative.

You have your column to state your views. If an issue is important enough to your readers, you will hear their views.

William B. Adams

Fishkill, N.Y.

#### Wrong Parameter

There are left-wing computing people out here, even in industry (we have the usual variety of human reasons for working where we do).

The reason you have no "flow of left-wing suggestions" from me - even though I disagree strenuously with the right-wing letters you publish - is that my criticisms are of the entire purpose and orientation of industry: making money. This failing the maximizing of someone's local parameter, financial profit, at the expense of the global parameter, human welfare - is, of course, not limited to the data processing industry.

But in this field, as in some other noteworthy spots, it surfaces in a conspicuous way. It is apparent in what we do - how much computer power is devoted to financial information, and how little to direct human benefit - and in how we do it.

It is no secret that the human subjects of so many of the files we create and manipulate receive short shrift in their dealings with the possessors of the data.

What does it matter if we nationalize IBM or socialize software if their purposes remain the same? What does it matter whether we travel by elephant or by burro if we shouldn't be making that trip at all?

Peter Kaiser

Somerville, Mass.

### Readers Respond to City's Query

#### On-Line Systems Benefit Public

Several quick observations can be made regarding voting systems in general:

- On-line voting systems will eventually come into general use in the U.S. as electronic systems and components costs decline to the point that such systems are economically justifiable.

- There are substantial benefits to the public in developing such systems. These include reduction in vote-counting errors at voting booths; improved accuracy due to elimination of batch processing media and removal of manual handling; and ability to match results reporting to election importance.

Some specific comments I would like to add about the matters raised in the article include:

- Dowell's people must have really worked like hell to get everything processed in three hours during the 1972 general elections, for which they should be heartily commended.

- The pressure of the press for reports every ten minutes seems absurd.

- I would agree with Taylor's observation that the area of management information and reporting needs to be addressed, although it would appear that a cost-benefit (to the public) and system optimization study should be performed to encompass all aspects of the system.

In closing, it seems to me that part of the reason for an apparent lack of public interest is

due to the fact that, as citizens, the feedback mechanism (both the press and the reports from exiting systems) provides us with too much of the same information too frequently, and is not designed so that we can feel a real participation in the governmental process.

Kent L. Cootes

Hawthorne, Calif.

#### But Voting Machines Best Now

Your discussion of the Detroit election system ignores the primary issue - punched card ballots. As I recall it was the ballots, not the programs, that caused counting delays in 1968. And not only were the counts late but their accuracy was seriously questioned by many.

Apparently Detroit has gone back to voting machines for recording votes. By doing so it eliminated all the problems associated with the preperforated fragile ballots of 1968. These ranged from loose chads to moisture distortion to simple card jams to miscount of sample ballots.

Dowell apparently has done an excellent job. The major obstacle has been overcome. On-line reporting would only add an expensive encumbrance onto an already working system.

Until optical or magnetic scanning of human-oriented ballots becomes more feasible economically, voting machines remain the best way to record votes.

Michael L. Silves

Portland, Ore.

### Silence Means Success Measuring Other Systems Is Detroit's Next Step

J. Richard Dowell, Detroit's DP director, recently asked, "Who cares about the speed of Detroit's Election Systems?" [Taylor Report, CW, Jan. 9]. The question arose when a deafening silence greeted the trouble-free Detroit elections last year.

This contrasted with the heavy press coverage given to earlier problem-plagued elections.

Dowell was considering further development of the system, but wondered whether it was financially justified and just who should pay for it.

A number of readers responded with comments (see box) but I

think they - and Dowell - misunderstood the meaning of the silence. Silence after an achievement defines a tolerable success level. It means, as far as Detroit's people are concerned, Dowell has done his work well.

Silence is the accolade of successful, professional routine. Almost all data processing is, from the outside, routine, so silence is in many ways the highest tribute that can be paid.

Where Now?

However, Dowell asked other questions in his letter. He wanted to know how he should proceed in the future. That is an important point to him and to others who achieve silent success. And the question does not have an obvious answer.

Dowell's own suggestion - that he further speed up the election reporting results - appears to be contraindicated by the silence.

(Continued on Page 12)

#### The Taylor Report

By

Alan Taylor, CDP





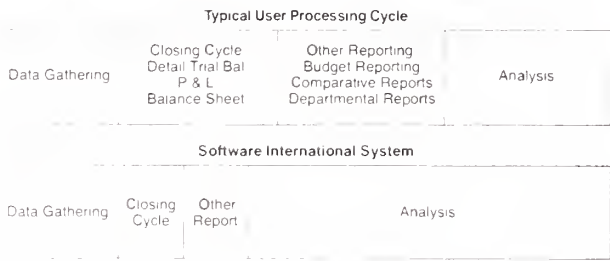
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## City's Next Step: Study Others

(Continued from Page 11)

Although speed used to be a worthwhile improvement, it is apparently not one now.

Clearly, there is no longer any obvious outside definition of the next valuable step in the computerized electoral process. Guidance is not going to come from some spontaneous, overwhelming demand from the city authorities.

Where then is Dowell going to get guidance? Some answers can come from inside the data processing community. These answers will deal with how more, generally newer equipment could be used. The responses suggesting on-line operation are typical of such ideas.

But beyond the establishment of feasibility, I don't see any great need to accept only these ideas.

There are many essential factors that DP-based suggestions leave out, non-data processing factors such as suspicions of corruption, human reactions to paper and non-paper ballots, etc. Suggestions may come from data processing, but for any real guidance, a great deal more specialized, *application* knowledge is needed.

Voting may look like a data collection system. Indeed, it is one, technically very like an airplane reservation system. Yet because the subject involved has different parameters — because voting for a government is not making airplane reservations — the correct decisions in the one case can be quite incorrect in the other.

What Dowell has to do now is work in the application area — now that he has achieved an acceptable success level in his data processing work.

Effectively, what I am suggesting is that he should use his available resources to compare his performance with other electoral systems — both computerized and noncomputerized. This is a task that can be quite easy, especially if there is a group of such systems already formed either independently or as part of some larger system group. Otherwise, one can simply write to other towns with such systems for their opinions.

Out of this will come a menu of known possibilities, and known costs or possible savings. There may even come a position rating — which can arouse the local interest that Dowell finds lacking ("Detroit moves into top ten cities for electoral cheapness — or speed — or minimal questionable votes").

Detroit has passed the first milestone. Dowell should recognize that he has successfully graduated from his DP studies, and must now enter upon the harder but essential tasks of DP manhood.

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## Random Notes

### Fortran Optimizing Means Listed on Paper, Fiche

SPRINGFIELD, Va. — A "fairly complete" list of programming techniques for optimizing execution times of routines written in Fortran IV (G and H) for the IBM 360 under OS is available from the National Technical Information Service on paper or microfiche.

Compiled by the National Aeronautics and Space Administration (Nasa), the document gives primary consideration to cutting down run times of the few loops that characteristically dominate the time taken by the entire program.

Paper copies of the list (identified as N73-32086/3WC) cost \$4.25 each; microfiche copies are \$1.45 apiece.

### Nova-Based Sort/Merge Package Handles All Files Under RDOS

LITTLETON, Colo. — Data General Nova minicomputer users can handle tag sorts, tagalong sorts, and Mini-Miz key file sorts with all types of files utilized by RDOS, with a generalized sort/merge package now available from the Automated Quill Inc.

The utility requires 24K words of core and at least one disk, costs \$3,950 and can be ordered from 744 W. Elati Circle, 80120.

### Data Manager 'System 1022' Installed on First Data Net

WALTHAM, Mass. — Users of the First Data Corp. remote-computing network can access System 1022, a generalized data management system that aids in the generation and maintenance of large data bases and the storage and retrieval of items from them.

Developed by Software House, Inc., Cambridge, Mass., System 1022 supports inverted file structures, a range of data types, a choice of application languages and stored routine capabilities.

First Data is at 400 Totten Pond Road, 02154.

### 'Dialog' Backs Scanning Of Multiple Data Bases

PALO ALTO, Calif. — Graduate students preparing theses and researchers in industry can interactively scan seven technically oriented data bases for literature related to their proposed areas of study, with the Dialog service now provided by Lockheed Information Systems, Inc.

The service is installed on Tymshare, Inc.'s remote-computing network. Bases currently available include the National Technical Information Service file; "Pandex," the MacMillan Co.'s index to scientific literature; and "Psychological Abstracts." Lockheed is at 3251 Hanover St., 94304.

## Some Cost, Some Don't

# H6000 Updates Ease Data Handling

By Don Leavitt  
Of the CW Staff

WALTHAM, Mass. — Better data handling and problem solving capabilities are the goals of a series of program updates announced by Honeywell for its 6000 Series CPUs. The collection includes a package for non-DPers working at display terminals and a beefed-up management science library.

Application packages in the announced updates include an enhanced inventory management system (IMS/6000) for manufacturers, and a combination document-entry and proof-and-transit system for commercial banks.

Management Data Query System (MDQS) gives the user a means of storing, retrieving and manipulating data at a CRT terminal without a heavy programming background. It allows multiple accesses to various file types and includes a security

system at the file and data item level.

MDQS, an update of the prior Data Query system, runs in a GCOS environment on 6000 Series CPUs with the extended instruction set. Available the fourth quarter of this year, it will have a monthly lease price of \$800.

### Library Update

The management science library now includes GPSS/6000, described as "functionally compatible" with other General Purpose Simulation Systems already on the market. It costs \$125/mo.

Checs, a combination of a previously available document entry subsystem with a new proof-and-transit subsystem, permits medium and large banks to process both optically and magnetically-encoded documents. It handles documents from entry through preparation of controls and audit trails for redistribution.

Checs requires 128K words of storage, three tapes and "appropriate" disk space under GCOS. It is available immediately without cost to 6000 Series users.

IMS/6000 is a transaction- and data base-oriented control system for assembly manufacturers. It integrates the functions of bill-of-materials processing, inventory control, material requirements planning and statistical forecasting with supply order generation, maintenance and control.

Modules for manufacturing cost control, automated inventory control parameters and product structure processing will all be available by mid-year, Honeywell said. IMS/6000 is free to 6000 system users.

## CIF, Transactions Run on Bank H2000

WALTHAM, Mass. — Banks with Honeywell Series 200 or 2000 mainframes gain central information file and immediate updating capabilities with a Bank Management Information System (BMIS) from Honeywell or from the developer, Affiliated Computer Systems, Inc. (ACS) of Dallas.

Supporting on- and off-line work and Micr applications, BMIS requires 131K words in dedicated mode or 198K words in multiprogramming mode, five tapes and three disks. Available now, the system costs \$150,000 from Honeywell here or ACS, 1171 Empire Central, Dallas, Texas 75247.

## 'Symbug-F' Sets Source Tests For Fortran Use Under VM/370

NEW YORK — Fortran programmers working in a time-shared environment under the Conversational Monitor System (CMS) of IBM's Virtual Machine Facility (VM/370) can interactively debug programs at the symbolic level with the Symbug-F package from Standard Data Corp.

The support software dynamically monitors execution of the user's Fortran program and enables him to examine data, to change data and to patch his coding, all at execution time. With an English-like command language, the user avoids working at the object-code level.

Under Symbug-F, the user can interact with his program whenever execution results in a program interrupt, when a predefined breakpoint is encountered, or whenever the user himself causes an external interrupt.

At any of these times, the user can display, compare or modify the contents of variables, or check the contents of any file or any specified addresses within memory. He may also use one or more arithmetic or logical expressions, following Fortran conventions, to test intermediate results of the execution.

Breakpoints can be reset and may be either absolute or conditional. Groups of Symbug-F commands can be stored as named routines and invoked as certain breaks are encountered.

In addition to providing conditional breakpoints based on the meeting of specific conditions, Symbug-F can also be used to continually monitor a variable and to return control to the user whenever the value of that variable changes.

By allowing the user to patch his pro-

gram in source code terms, the package can cut sharply into the number of recompilations needed during the testing phase of program development.

Installation of Symbug-F takes less than a day, the company said. The package costs \$10,000, but lease and rental plans are also available.

Standard Data is at 1540 Broadway, 10036.

## 'Fmaint' Cuts DOS Library Times

BURLINGAME, Calif. — DOS/360 users can access program libraries very rapidly, read compiler or assembly output back from disk during object deck maintenance, and perform all library maintenance chores in a multiprogramming environment with Fmaint from Software Design, Inc. (SDI).

Fmaint is a superset of IBM's Maint software that allows the user to work with DOS Core-Image, Relocatable and Source Statement libraries. Speed is a key difference in the otherwise similar utilities: Fmaint's accesses are five to 10 times faster than those made with the IBM software, SDI claimed.

By removing restrictions on reading compiler or assembly output even while object deck maintenance is under way, Fmaint allows a better check on exactly what the user is doing as changes in the object code are made, the firm said.

Support for library maintenance work in multiprogramming mode gives the Fmaint user another advantage. With IBM's Maint, the library work requires the shutdown of all other operations.

One of the most time-consuming operations in library maintenance is the reorganization and condensing of the libraries to purge them of obsolete program copies. This is done primarily to utilize disk space devoted to the libraries more efficiently.

In the condensing operation, Fmaint again shows its speed compared to Maint. A condense run that might take two or more hours with the IBM software, can be completed in 15 minutes with Fmaint, SDI claimed.

The relative slowness of Maint's condensing is one of the reasons users have turned to library maintenance packages from independent software houses, the company said.

Fmaint functions in any partition of DOS having at least 44K bytes of storage. It also supports input, with the symbolic name SYSIPT, from 2311, 2314 or 3330 disks or tape of 80- or 81-byte records. Is.

Fmaint leases for \$150/mo and is available immediately from SDI at 880 Mitten Road, 94010.

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## Control Cards Alter Receivables Work, Allow Multiple Approaches Within Run

BURBANK, Calif. - Multiple companies or divisions with unique accounts receivable requirements can be processed in 64K and in a single pass of the Self-Adjusting Accounts Receivable Management (SA/Arin) system from Occidental Computer.

The software provides invoicing, statements, accounts receivable reporting and cash control. It also generates follow-up notices, and statements and statistical and analytical reports with distribution of sales activity by salesman, location, item and dollars generated.

Accounts may be maintained under open-order or balance-forward methods, and the method may be changed from one unit being processed to the next. Details of how each unit should be processed are passed to the system at execution time via parameterized "profile" records.

"Profiles" allow for individual differences between units being processed, including - for example - the need for a separate inventory master file with pricing, special forms and collection methods, special methods for applying cash, or

special payment instructions.

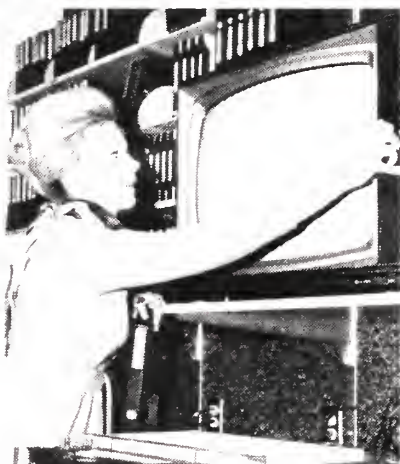
The SA/Arin file design provides for variable input and individual field update via field ID numbers so that the system can accept input from remote terminals such as teletypewriters or tape cassette devices. External control is supported through a set of input forms for charges, cash receipts and other batched totals.

Output available under the system includes transaction control reports, account master listing or index cards and item reference or price books. Customer ledger cards are generated by an optional routine and aged accounts reports or index cards are also produced, under "profile" control.

Written in ANS Cobol, the system is designed for IBM 360/370 equipment but apparently could be transferred to other CPUs with minor modifications. Separate versions are available for OS and DOS/360-370 environments, at \$12,600 and \$14,000 respectively, including source code and 100 man-hours of installation support.

Occidental is a division of Executive Computer Systems, Inc., at 805 S. San Fernando Road, 91505.

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## HP Option Supports IBM's CAI Programs

PALO ALTO, Calif. - Computer-assisted instruction (CAI) materials can be written in IBM's Coursewriter language, but compiled and executed on Hewlett-Packard's HP 2000C and 200F systems, with the Course Writing Facility (CWF) to be available from HP in May.

Programmers can create links between CWF courses and HP's "high-level" Basic so that students can shift from the CWF course to the Basic facilities and later return to any portion of the CWF lesson.

In addition to supporting development of new CAI materials, CWF converts CAI courses written in IBM Coursewriter III, version 3, so they can be run on the HP equipment. There are, by HP estimates, "hundreds" of existing courses written in the IBM language and available at little or no cost from many sources.

CWF can be purchased for \$3,000. HP is located at 1501 Page Mill Road, 94304.

## OS/360 Fortran Programs Gain Qsam File Support

ATHENS, Ga. - Fortran programmers working under OS/360 can read and write records of unknown length on sequential data sets using IBM's Queued Sequential Access Method (Qsam) data management, with a utility routine, captioned MFS-18725, from the Cosmic clearinghouse at the University of Georgia here.

The routine has some limitations, Cosmic admitted. Only one data set can be input and output at a time. To input/output more than one data set, the old one must be closed prior to use of the new one.

After closing, a tape can be rewound to the beginning of the data set or left in position where the data set ended.

MFS-18725 is written in Assembly language. Cosmic has not indicated how much storage the routine requires but said it includes "approximately 300 card images."

The routine is available for \$200; documentation is separately priced at \$7.50. Cosmic is at 112 Barrow Hall, 30602.

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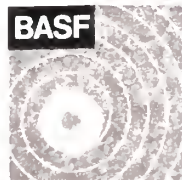
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- 07 DP Serv./Bureau/Software/Planning
- 08 Business Services (except DP)
- 09 Education/Medical/Legal

- 10 Federal, State and Local Government
- 12 Communication, Printing, Publishing
- 13 Other

### FUNCTION

- 01 Corporate Officer
- 02 Data Processing & Operational Management

- 04 Data Processing Professional Staff/Consultant
- 05 Lawyer/Accountant/Engineering/Management/Scientific R&D
- 07 Sales/Marketing/Account Executive
- 08 Librarian/Educator
- 09 Other

- ☐ First Day —

Source Data Automation Today
- ☐ Second Day —

Data Communications Update
- ☐ Third Day —

Operations Management

### Check city

- ☐ Washington

Feb. 20-22

Shoreham Hotel
- ☐ Cincinnati

Feb. 26-28

Cincinnati Convention Center
- ☐ Houston

Mar. 5-7

Albert Thomas Convention Center
- ☐ Anaheim

Mar. 19-21

Anaheim Convention Ctr. South Hall (Exposition) Sheraton Anaheim (Forums)
- ☐ San Francisco

Mar. 26-28

Civic Auditorium
- ☐ St. Louis

Apr. 3-5

Chase Park Plaza Hotel
- ☐ Chicago

Apr. 9-11

Hyatt Regency O'Hare
- ☐ Boston

Apr. 15-17

Northeast Trade Center (Rte. 128, Exit 39 or 40)
- ☐ (Woburn)

Apr. 23-25

Charlotte Convention Center
- ☐ Charlotte

Apr. 30-May 2

Americana of New York
- ☐ New York

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## Bits & Pieces

### PDP-11 Core Loader Fills 8K Program in One Minute

SANTA ANA, Calif. — The Model 41-104 ROM-controlled PDP-11 program loading unit from Applied Data Communications will load 8K of core from a magnetic tape cartridge in less than one minute. The portable loader ROM is pushbutton activated to automatically control the processor and perform the absolute core load function. Up to 55,000 PDP-11 words can be loaded from one cartridge.

This portable unit is intended for field service or initial installation use to perform initial processor loading or core refresh. In addition to diagnostic program absolute load, a library file management program is offered.

The unit is software controllable as a read/write serial peripheral and will create its own cartridges.

Single unit price is \$2,510 including termination. The 5-ft Unibus cable is \$200 with other lengths available.

The firm is located at 1509 E. McFadden Ave., 92705.

### Diablo's Hytype Printer Dressed For End-User Applications

HAYWARD, Calif. — Although previously available to OEMs only, Diablo Systems has dressed up its Hytype 1 serial printer for end users.

The 30 char./sec printer now has a pin feed platen, auxiliary tractor form feed device, snap-in cartridge ribbons and interchangeable character wheels with a choice of 12 different fonts.

The printer is priced at \$3,645 from the Xerox subsidiary at 24500 Industrial Blvd., 94545.

### Diva Cartridge Disk Interchangeable With DEC's RK11/RK 03, 05

EATONTOWN, N.J. — The PDP-11 Cartridge Disk System from Diva, Inc. is software- and hardware-compatible with DEC's RK 11/RK 03 and RK 05 disk drives.

Cartridges are directly interchangeable between them and the system includes controller plus one to four moving head disk drives with either removable or fixed cartridges.

Storage capacity is 1,228M word/disk. Track-to-track access is 15 msec. Data transfer rate is 1.44 Mbit/sec and disk rotational speed is 1,500 rpm.

The system uses an IBM 2315-type cartridge and Diablo series 30-type drives and is available in single- or dual-cartridge models. A controller with one drive and power supply is priced at \$8,465.

Diva is at 607 Industrial Way W., 07724.

## As 370s Proliferate

# Used 30s, 40s Seen a Bit Harder to Sell

By Vic Farmer  
Of the CW Staff

ELMSFORD, N.Y. — Owners of 360/30s and 40s are finding it a little harder to sell their machines, according to Time Brokers, Inc. (TBI), a broker of computer equipment.

In the 1974 winter issue of its *Computer Price Guide*, TBI said, "During the past quarter, 360/30s and 40s were available in abundance and although dealers were placing a number of complete systems with end users, there was a general reluctance to maintain inventories at as high a level as had been previously accepted.

"The cumulative effect of this cautious approach was to make it somewhat more difficult for an end user to move his computer.

"Where, for example, a year ago a company might find an acceptable offer in two or three weeks, it has become more common for it to take anywhere from a month to six weeks to strike an acceptable agreement," the guide said.

Prices of 30s and 40s, in the last quarter, showed a sharper drop than they have shown over the past year and a half. Expressed as a percentage of list price, 360/30 asking prices average low to mid-thirties; 360/40s, mid-thirties.

TBI ranks the Models 50 and 65 the best buy in the present market and explains:

"The 370s have started to move in the used market at a relatively good pace. The market has become a very sophisti-

cated one, in which the distinction between 360 and 370 has become less important than what the particular piece of equipment will do for the user.

"This fuzziness between the 360 and 370 seems to be most prevalent in the larger systems, where the 360/65 has gained a good deal of strength through the announcement of non-IBM 3330-type disk files.

"Some people, noting that a 370/155 does not have control storage, regard this

computer as "the last of the big 360s" rather than the first 370, TBI added.

Time Brokers also sees a definite split between the 145-1 containing an IFA for the 2319 disk drives, and the 145-2 which has much more upward core flexibility and takes up less space but does not have an IFA and requires a control unit to handle disk files.

The *Computer Price Guide* is issued quarterly and costs \$10/yr from the company at 500 Executive Blvd., 10523.

## Front End for 360s/370s Allows Use of Non-Compatible Peripherals

PHOENIX — Intercomputer Communications Corp.'s 15X peripheral processor allows the attachment of many non-IBM peripherals to any 360/370 multiplexer channel.

The number of peripherals is limited only by the availability of device assignments on the CPU. The 360/30, for example, has 176 assignments.

The 15X consists of a computer interface adapter, a minicomputer processor and a bevy of I/O slot options. The processor uses standard supported unit record software by emulating an IBM 2821 card/print control unit.

Through the use of options, a user can attach card readers, punches, printers, consoles, disks, tapes, and asynchronous and synchronous terminals in short,

nearly any peripheral using the standard RS 232 interface.

The serial or parallel communications adapter allows either four asynchronous inputs of up to 300 bit/sec or two synchronous inputs of up to 9,600 bit/sec per slot. The basic 15X has eight slots, but can be expanded.

One of the possible applications of the processor would allow use of the entire range of printers and other independently supplied equipment to tailor the applications running on the CPU, the firm said. For example, if a 360/30 user didn't need a 1401 printer, he could substitute any of the independents' 300 line/min printers. A user could also dedicate a relatively inexpensive tape drive to card-to-tape or tape-to-print functions.

The 15X with the basic card reader/punch and printers costs \$20,000. Third-party full payout leases can be arranged, according to the firm at 2201 E. University Drive, 85036.

## Old 360/30s Just Don't Die... ...They Get Faster Memory

NEWTON, Pa. — Users of purchased 360/30s who want to change from the old 2- $\mu$ sec core memory to the 1.5  $\mu$ sec memory can potentially save \$15,000 over IBM's conversion costs, by obtaining the faster memory from Computer Hardware Consultant & Services, Inc.

CHCS took 12 hours to pull out the 32K 2- $\mu$ sec memory at Electric Equipment Co. in Los Angeles recently and replaced it with 96K of 1.5  $\mu$ sec memory.

There were no problems with maintenance because Electric Equipment was already using independent maintenance.

Replacing the minimum native core entailed designing about a 2K memory for local storage, some microprogramming circuitry and the general-purpose registers.

In addition to the 25% increase in memory access time, the 1.5  $\mu$ sec memory allows the use of 2314-type disk drives.

The user saved about \$15,000 on the conversion. An IBM spokesman said its approach to the conversion requires additional power supply equipment and in some cases the user is called on to provide certain types of cabling for the conversion. IBM said it replaced all the old core on its leased machines over three years ago.

The 96K memory installed at Electric is already above the 64K IBM standard limit, but CHCS will go even higher.

The conversion of 64K of core will cost \$24,000 from the company located at 8 Pheasant Run, 18940.

### Intel Joins the Ranks to Offer 3330-11-Type Replacement Unit

SAN FRANCISCO — Intel Corp. has joined the ranks of independents offering an IBM 3330-11 replacement double-density-type disk drive with IBM-like specifications.

Prices of the 7330-11 drive are \$715/mo on a two-year lease with purchase set at \$32,050. Intel has not yet announced prices on the required controller. The company is located at One Embarcadero Center, 94111.

## Power Regulator Goes to 2.5kW

SEATTLE — Uninterruptible power ranging from 250W to 2500 W is available from Rateco, Inc.


The package consists of a charger, a dc to ac inverter and a battery pack, and will provide 15 minutes to eight hours of continuous ac power when commercial power fails.

Transfer switches are available with switching times of less than 2-, 14- and 50 msec.

Prices start at \$700 plus batteries. Rateco is located at 610 Pontius Ave. N., 98109.

### CORRECTION

In the article "Most S & S Sites Cost \$69 hour" [CW Feb. 6], the average system 3 I/O rate reads read plus lines printed is 50 min not per hour.



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A total data entry solution, Model 7008 combines eight 288-character video terminals with a 24K byte processor, 2.5M byte disc drive, and 800 bpi tape drive. All for \$120/month per station on a 1-year lease including software, installation, maintenance, operator desks, cables, and customer education services. A terminal-oriented self-teaching instruction course is also provided for individualized operator training.

For hard copy output of screen images and data files, a 30 cps printer is available for \$120/month.

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6.

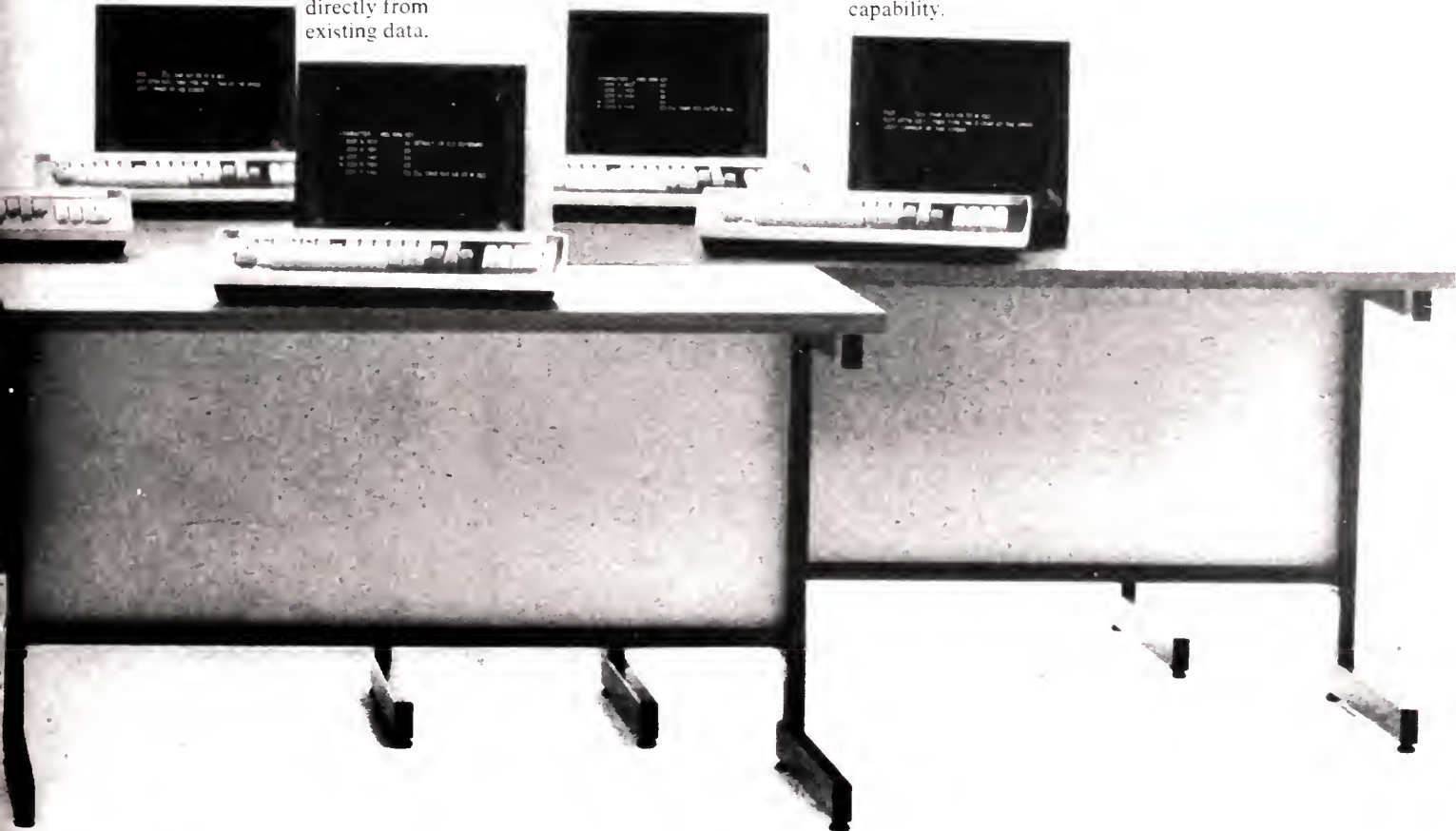
Provision for generating fields such as price-quantity totals, discounts, and taxes directly from existing data.

7.

2.5M byte disc drive stores 20,000 80-character records for continuous keying with minimum disc purging.

8.

24K byte computer is upward compatible with Four-Phase's larger key-to-disc systems for future growth in terminals, peripherals, and processing capability.





## A Catalog of DP — Part I

# Penney's Operations Are Growing by Leaps and Bounds

MILWAUKEE J.C. Penney's DP operation is matching the rapid growth of the firm's catalog sales. In the past year the firm added a 370/168 with 2M bytes of memory to its 370/155 (1M byte) and 165 (2M byte) center and converted from 196, 2314/2319 disk spindles to 80,3330 drives at its main DP center here. The 3330s are on 4-channel switches.

J.C. Penney entered the catalog business in 1962, and from the early stages of the DP department's involvement in catalog sales the company has used an information retrieval system based on computer output microfilm (COM).

At the firm's catalog order-processing distribution center in Milwaukee and at its distribution center in Atlanta, the use of microfilm instead of bulky, computer printouts has relieved a potential paper-handling problem and has helped the company achieve a 24-hour turnaround on the major share of incoming orders.

A major factor contributing to this turnaround is the information retrieval system used. "Throughout both the order-processing and distribution operations, we



Instead of on-line terminals, J.C. Penney uses computer-generated microfiche readers to keep track of inventory.

need fast access to up-to-date information on subjects ranging from the location of a size 9D shoe in brown to a response to a customer regarding a specific invoice," according to Bernard Gomon, manager of both J.C. Penney catalog data processing centers.

### On-Line File

The customer file is always on-line and requires 20, 3330 spindles, Gomon said.

At the Atlanta center a 360/65 was basically used as a communications interface running 14, 1401 N3 printers and updating the main center, but Gomon is presently splitting up this arrangement and creating a completely separate center to insure some backup capability. He will soon start installing a 370/168 for this purpose.

To eliminate hard-copy computer printouts and to provide rapid information retrieval, J.C. Penney uses 16mm micro-

film and 105mm microfiche extensively throughout its catalog operations. Gomon presently is converting almost entirely to 105mm to eliminate the strip-up associated with 16mm output.

The firm began using microfilm in 1966 and in 1972 replaced an older COM system with two Pertecc 3700 COM systems. Used in Milwaukee and Atlanta, the COM units have a universal camera that produces both microfilm and microfiche without the need to change cameras.

The Milwaukee data center would be buried under paper if microfiche were not used. Typically, the center processes nearly 500,000 orders each week. During the peak Christmas season, the volume can exceed 1.5 million weekly orders. The 3700 produces an average of 2.5 million original microfilm frames each month.

Gomon explained that microfilm or microfiche are used in four major areas: customer invoicing, the master directory of accounts, purchase order receiving and inventory control.

Catalog orders are received from two sources. About 80% arrive from the 1,100

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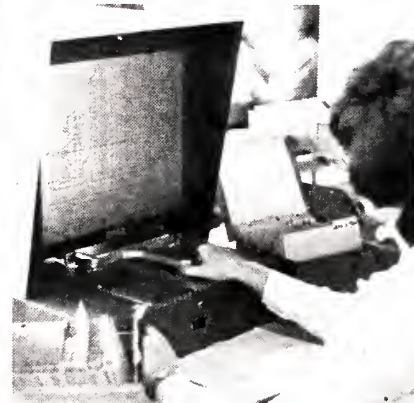
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On many direct mail orders received at J.C. Penney, a customer neglects to indicate the correct account number. Using a 10,000-page directory on microfiche, a customer representative can easily provide the missing information.

catalog sales desks located in J.C. Penney stores in the eastern two-thirds of the country, and the remainder through direct mail. Of those orders received from the catalog desks, three-fourths are sent by teletypewriter at least once each day. Some stores use a Maxson terminal which automatically calls the Milwaukee data center when its buffered memory is full and transmits the order information.

Whichever way orders are received, they are put on paper tape which then is transferred onto a disk for batching. Programmed information includes customer's name, address, account number and a

(Continued on Page 25)

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## For Programmable Calculators, Too Wang Adds Floppy Disk to 2200

TEWKSBURY, Mass. — Wang Laboratories has added a floppy disk for its 600 and 700 series of calculators and System 2200 computers.

With the addition of the dual removable flexible disk drives, Wang's systems will be useful to smaller applications requiring high-speed data access, according to the company.

Storage capacity, depending on the

model chosen, is 256K bytes or 512K bytes — about one-half to one-eighth the size of conventional fixed/removable disk memories. The units range in cost from \$5,500 to \$7,000.

Each disk drive holds two removable disks; data transfer is about 300 msec for 256 bytes.

The drive includes built-in address checking and a cycle redundancy check. For instance, if an operator tries to SAVE or LOAD data with an illegal address, the system automatically notifies him of the error.

An additional two bytes of information are also automatically recorded at the end of a block of data to verify that information is correctly loaded from the disk to the calculator. This way the user can be sure no information is lost without his being notified, the company noted.

Delivery is three months from the company at 836 North St., 01876.

## Penney's Operations Experiencing Growth

(Continued from Page 24)

digital description of the merchandise ordered.

Many times, especially on direct mail orders, a customer neglects to indicate the correct account number. J.C. Penney maintains a 11,000-page directory on microfiche covering all customers. The directory is indexed by customer name and address and provides the account number and credit limit. Segments of the directory are updated each day with the entire directory updated during each month.

After the correct information has been entered on the order, it is keypunched. The computer then produces an invoice, schedules the filling of the order, notes any out-of-stock or discontinued items, rejects incorrect stock numbers, and issues instructions for filling and shipping the order.

The information for the invoices is then recorded onto magnetic tape and the tape is transferred to the COM system and microfilmed. The microfilmed invoices are used by the customer service department to answer inquiries from customers as well as from catalog sales desks.

Information contained on the invoice includes any out-of-stock or discontinued items, status of the order, shipment date and shipment method, if appropriate. The invoice file is incremented daily for customer orders shipped.

In addition to the invoice file which is organized by invoice number, the customer service department uses a transaction index file in microfilm which is organized by customer account number. Updated daily, the file contains a history of all activities on the account during the month.

Part II will cover the COM uses in the non-office environment.

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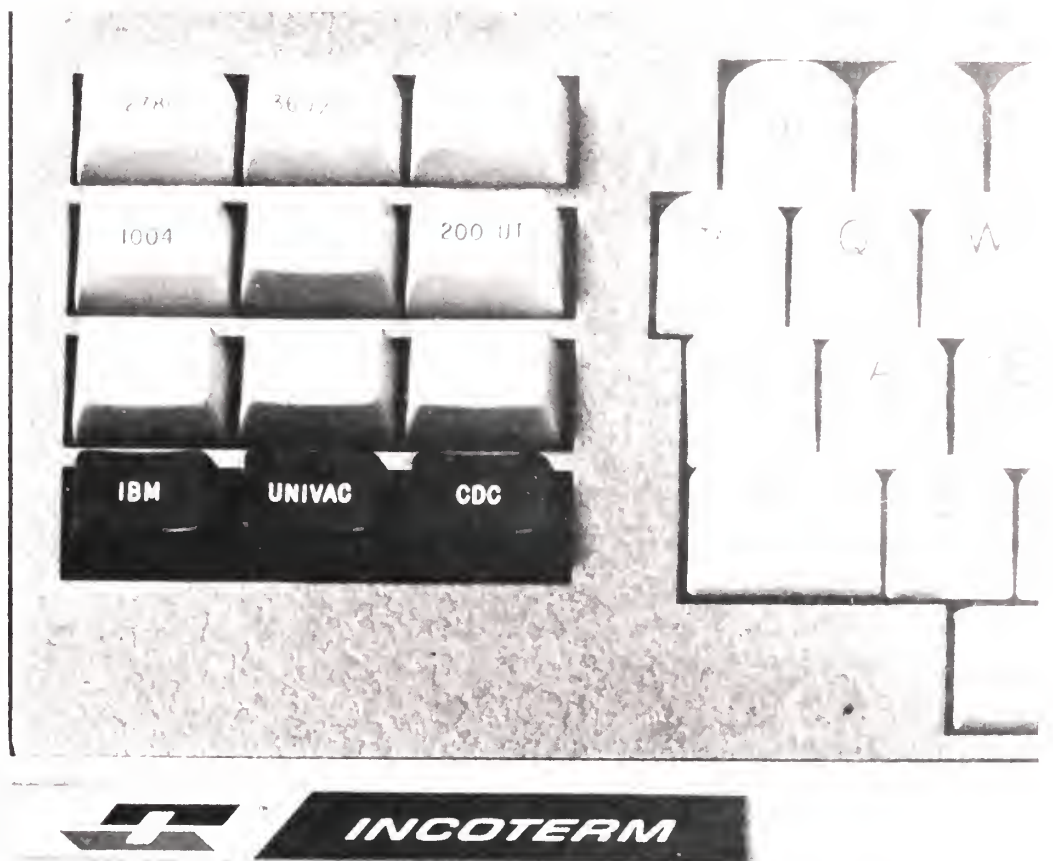
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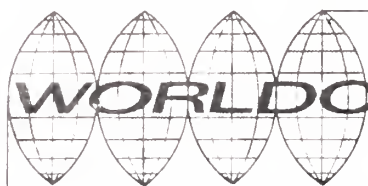
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**NEW YORK**—A seminar on the fundamentals of data processing for the personnel department plus two concurrent workshops—on absenteeism and retirement counseling—are being sponsored by the American Management Associations.

These are separate from AMA's Annual Systems Management Conference, March 11-13.

The seminar, March 13-15 at AMA headquarters, will explore the benefits of a computer for personnel, the essentials of a good personnel system, and the relative economic merits of a DP system versus a manual one.

Additional sessions include "Laying the Groundwork for a Personnel Application," and "An Integrated Personnel Data Approach—Skills Inventory, Salary Administration, Benefits and Employee Records."

Registration for the seminar is \$280 for AMA members, \$320 for non-members. Additional information is available from AMA, 135 W. 50th St., 10020.

## Society Sundries

A Canada-wide study of the mathematical sciences is being conducted by six societies, including the Canadian Information Processing Society.

Funded by the Science Council of Canada, the study will assess the present role of the mathematical sciences in Canadian education, science, government and industry, and suggest possible improvements at all levels.

Amos E. Joel Jr., Bell Laboratories Switching Systems Engineering Division, has been elected president of the Institute of Electrical and Electronics Engineers (IEEE) Communications Society.

Richard Jennings, a systems analyst, has been appointed the first student representative to the British Computer Society Council.

Philip J. Kiviat, technical director of the Federal Computer Performance Evaluation and Simulation Center, has been elected Chairman of ACM's SigMetrics group.

Janet Madigan has been named director of management programs for the Western Electronics Manufacturers Association.

The National Microfilm Association (NMA) has issued two new publications—a *List of Micrographic Standards and Related Items* (Reference Number RR1-1974), and a *Bibliography of Micrographics* (Reference Number RR2-1974).

The proceedings of the 1973 International Telemetering Conference are available from the Instrument Society of America. Cost of the volume is \$25 from ISA, 400 Stanwix St., Pittsburgh, Pa. 15222.

## Call for Papers

*1974 Sagamore Computer Conference on Parallel Processing*, Aug. 21-23, Sagamore, N.Y.

Papers describing recent advances on all aspects of parallel processing are requested.

Submit three copies of a 100-word abstract and a 1,000-word summary before March 15 to Prof. T. Feng, Department of Electrical and Computer Engineering, 111 Link Hall, Syracuse University, Syracuse, N.Y. 13210.

*ASIS 37th Annual Conference*, Oct. 13-17, Atlanta, Ga.

Papers on the topic of information utilities, including information utilities as a service to the general public and professionals, and delivery systems are solicited.

Authors who plan to submit a paper should

notify the Asis-74 chairman before Feb. 18, 1974. Contact Dr. Pranas Zunde, Asis-74 Technical Program chairman, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, Ga. 30332.

*AIEE Second Annual Systems Engineering Conference*, Nov. 6-8, Minneapolis, Minn.

Papers are requested in the areas of minicomputer systems, integrated systems for materials management, computer-aided systems studies and management systems.

An abstract of 300 to 400 words must be submitted no later than March 15 to 1974 Systems Engineering Program, c/o Technical Services, American Institute of Industrial Engineers, Inc., 25 Technology Park/Atlanta, Norcross, Ga. 30071.

## Dear Ma: Vadic Has Just Sawed Line Costs In Half!

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## Discussion, Exchange On Minicomputers Aim of ACM Committee

NEW YORK — Can minicomputers be defined? Should you use one? These are the types of question a new ACM Special Interest Committee, SicMini, is going to tackle.

"Two out of three computers installed in this country are minicomputers, so it

### Societies/ User Groups

might be nice if people got together to understand what a minicomputer is," said Jon R. David, president of Systems RDI and chairman of the new committee.

#### Communication Needed

People in the field should communicate with one another. And people who are not really in the field should be able to get some information, he said.

"SicMini will hopefully be a place where new things can be presented by people in the field who hopefully know what they're talking about," he said.

David proposed a national organization dedicated to minicomputers last year [CW, Nov. 28]. As chairman of SicMini, he proposes the same general aims for this group:

- To provide a forum where ideas, concepts, equipment and other related matters can be set forth for discussion and exchange.
- To provide a source of information and assistance for both users and potential mini users.

#### Newsletter

One project high on David's list of priorities is a monthly newsletter.

"Initially we're going to try and at least briefly cover all aspects of the minicomputer area in either applications or forum pages of the newsletter," David said, "and as a function of the interest elicited by the members we will concentrate our efforts thereafter."

Membership in SicMini is open to both members of ACM and others. The group already counts members from 35 states, Canada, Puerto Rico, Europe and Israel, David said.

Information concerning SicMini is available from ACM, 1133 Avenue of the Americas, 10036.

## Wema Transcripts Available

PALO ALTO, Calif. — Transcripts of the 1973 Wema Monterey Conference are now available.

The collection includes panel discussions on "The 1974 Outlook for Semiconductors," "The Long-Range Impact of the IBM-Telex Decision," and "How the Financial Community Looks at Small Companies."

Price of the publication is \$10 to non-members and \$7.50 to Wema members, from 2600 El Camino Real, 94306.

## Calendar

Feb. 25-26, San Francisco — Symposium on Category Theory Applied to Computation and Control. Contact: E.G. Manes, Dept. of Mathematics, University of Massachusetts, Amherst, Mass. 01002.

Feb. 25-26, New York — Health and Welfare Management Systems. Contact: New York University, School of Continuing Education, Room 3700, 600 Third Ave., 10016.

Feb. 26-28, San Francisco — Compeon 74. Contact: IEEE Computer Society, P.O. Box 639, Silver Spring, Md. 20901.

March 6-14, Cleveland — Institute of Internal Auditors, Inc. Seminars. Contact: Kathy Fedell, 5500 Diplomat Circle, Orlando, Fla. 32810.

March 7, Washington, D.C. — Computer Law Association Meeting. Contact: Robert P. Bigelow, 28 State St., Room 2200, Boston, Mass. 02109.

March 7-9, Olympia, Wash. — First Annual International Computer Film Festival. Contact: Richard Speer, Dept. of Computer Services, Evergreen State College, Olympia, Wash. 98505.

March 11-13, New York — AMA's 20th Annual Systems Management Conference. Contact: Vern Lautner, AMA Building, 135 W. 50th St., 10020.

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## DP and Contracting — Part I

## Contract Deficiencies 'Less Excusable Than Ever'

By Marguerite Zientara  
Of the CW Staff

BOSTON — "Deficiencies in computer contracting practices are more serious and less excusable today than ever before because of the accumulated evidence of the harm they cause users and suppliers alike and because many users, but hardly enough, are now undertaking to use correct contracting practices," Roy N. Freed, a Boston attorney said in a recent interview.

Freed conceded, however, that users seem to be getting wiser and are starting to use their bargaining power to achieve better-negotiated agreements with suppliers.

Where bad contracting practices exist, however, they continue to sap users significantly, Freed said, both financially and administratively. This happens both in transactions gone sour — where the adverse consequences of organizational dis-

ruption and lawyers' fees are apparent — and in transactions involving lost hidden opportunities, especially possible tax savings through proper transaction struc-

It is now more essential than ever that management of companies using computers promptly examine their contracting practices and tighten them up in the very many cases where appropriate. This series will pinpoint the primary areas of deficiency.

turing, he said.

As an example of bad contracting, Freed cited a situation in which he was recently involved.

"A medium-sized, successful periodical publisher selected a service bureau for subscription fulfillment work from a persuasive advertisement and ended up with a claim for dollar damages of about \$200,000 after the fiasco continued for

less than six months, during which its mailing list was fouled up, its subscribers were riled and its management was driven almost to distraction by firefighting tasks."

This example is just one situation among many, according to Freed, which proves the following basic points:

- Even apparently small transactions handled sloppily can expose users to great losses when they go sour.
- Even apparently simple, familiar business arrangements, like service bureau work, can have similar serious adverse results.
- There are great benefits to be achieved in dollars, through savings in state and local taxes and litigation lawyers' fees, from a sound businesslike use of tried and proven contracting methods.
- Proper legal guidance throughout the contracting process can help substantially in avoiding the pitfalls and in achieving

benefits.

Freed claims the right way to contract is "remarkably easy to understand and to pursue" and offers the following list of basic steps in the process:

- The user must consider and define in writing, at the earliest possible moment and for his own use, the nature of the use to be made of a computer system, including its particular needs to be met and constraints to be satisfied in automating the information processing activities involved.
- In light of that definition, the acceptable business arrangements for securing computer system use should be selected from among the following alternatives, for use either alone or in combinations, as appropriate: purchase of complete system; lease of complete system; acquisition of system elements separately — software programs and equipment; purchase of equipment maintenance; purchase of system analysis and design; purchase of education on use of a particular computer system; purchase of data processing; purchase of interactive time-sharing use, with or without terminals; purchase of on-site use of system; purchase of facilities management; and purchase of communications use.
- Potential sources of these elements should be selected and qualified for technical ability and reliability.
- The user should prepare a clear, complete, professional draft agreement reflecting his needs and goals as defined in the first step and submit it to suppliers selected for negotiation.
- The transaction should be negotiated thoroughly, by taking full advantage of the customer's bargaining power.
- The negotiated transaction should be reflected in a formal written agreement that describes the transaction completely.

Freed especially stressed the importance of preparing a draft agreement, since it provides the basis — the subject matter — for negotiations. Since the draft has all desired rights, obligations and conditions set forth in writing completely and understandably, Freed said, it surpasses oral negotiations.

Responsible business executives, according to Freed, "would be well advised to respond affirmatively to signals from their subordinates of the need for more skillful handling of computer use procurements." Expenditures of effort and expense to do so will pay substantial dividends in smoother operations, the avoidance of monetary losses, and savings of avoidable taxes and other expenditures, he said.

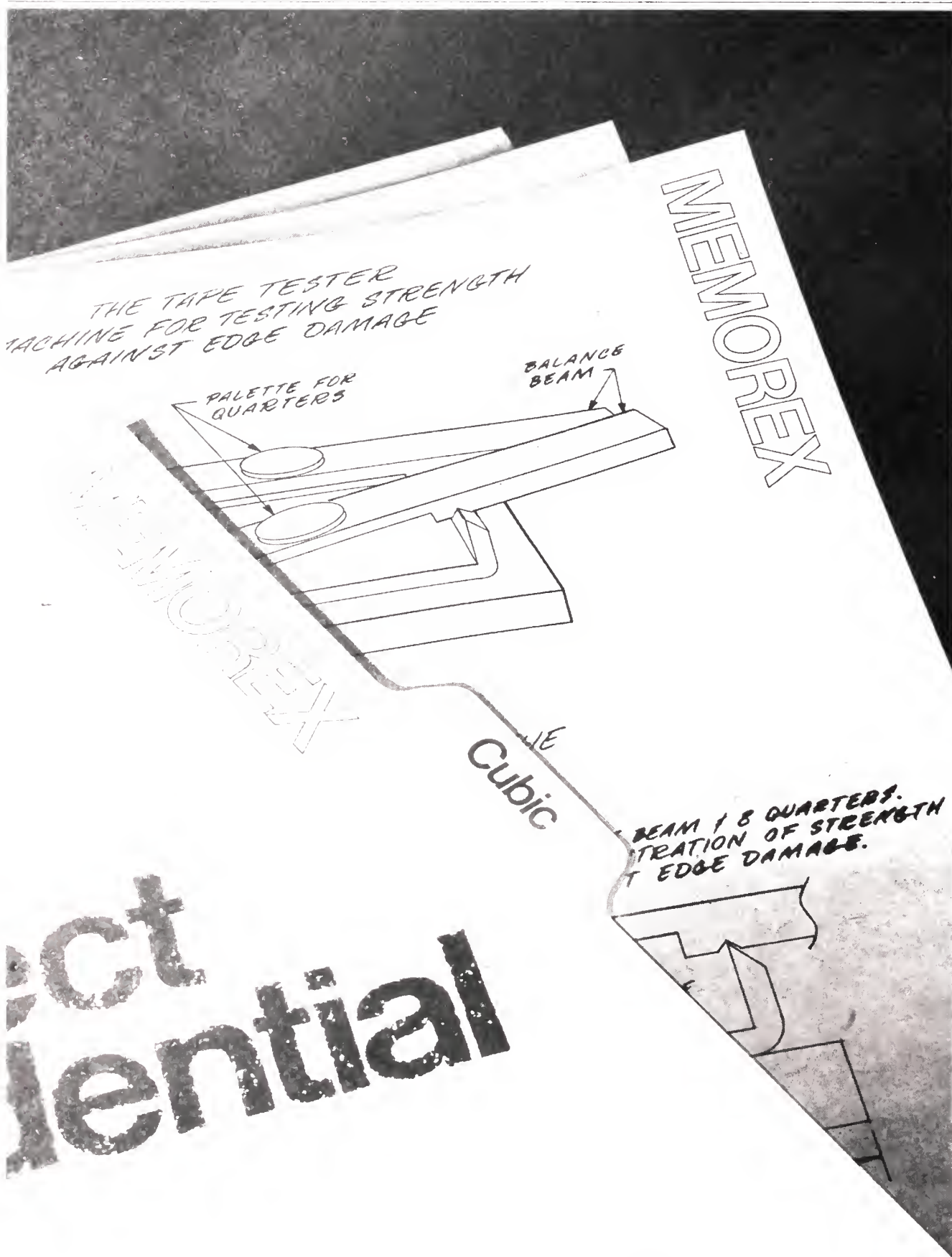
"As each day goes by, default in this respect is less excusable," Freed said.

Freed is an attorney with Peabody, Brown, Rowley and Storey and has specialized in computer contracting. He has recently conducted the first of three seminars in a series sponsored by Computerworld which covers the subject of computer contracting. The two remaining seminars will be held in Chicago March 13-15 and San Francisco May 22-24.

## Using a Lawyer? He Should Know His DP

BOSTON — In seeking legal help for the project of procuring a computer system, Roy N. Freed believes the user should choose a lawyer who really understands the nature of electronic information processing technology and its use. He should also be familiar with the impact of taxes, government regulation, transaction laws and antitrust laws on transactions involving its use.

"Such a lawyer will be able to make certain that written statements of important contract elements, like performance specifications and acceptance tests, will be clear and complete," he said.





## NCR DP in Black for 1st Time

# CDC, NCR, Honeywell DP Units Strengthen Earnings

By a CW Staff Writer

Earnings from computer operations are playing an increasingly significant role for three mainframe makers.

Control Data Corp.'s computer group's earnings more than quadrupled and offset a decline in the financial services sector.

NCR's computer business moved into the black for the first time in 1973, contributing to record earnings of almost \$72 million. Computer revenues, shipments and incoming orders all showed substantial gains.

And Honeywell, Inc. showed a 27% rise in its 1973 computer sector earnings and reported record earnings and revenues for the fourth quarter and year ended Dec. 31.

Earnings for CDC's computer group more than quadrupled to \$17.2 million from \$4.2 million a year ago, while the earnings of Commercial Credit, the financial services subsidiary, declined 21% to \$43.7 million from \$55.6 million.

Revenues for the year ended Dec. 31 totaled \$948.2 million compared with \$683.8 million in 1972, with substantial increases in the rental and services areas.

Earnings grew to \$60.9 million or \$3.73 a share from \$59.8 million or \$3.85 a share on fewer shares outstanding last year.

Chairman William C. Norris said sharply higher volume of data services and increased sales of peripheral equipment contributed to the strong overall performance of the computer operations.

CDC acquired the Service Bureau Corp. Jan. 12, 1973, in a purchase transaction as part of the settlement of its antitrust suit against IBM. If 1972 earnings were restated to include results of SBC, earnings for the quarter and year would have been increased by \$699,000 and \$5 million, respectively.

"Orders in the computer business reached \$1 billion for the first time in 1973 and backlogs going into 1974 are up from a year ago," Norris said.

For the fourth quarter, CDC earnings declined to \$15.2 million or 93 cents a share from \$16 million or 98 cents a share in the last quarter of 1972.

Computer operations earnings doubled to \$5 million and Commercial Credit earned \$10.2 million, down from \$13.5

million a year ago.

Fourth quarter earnings amounted to \$277.9 million compared with \$209.7 million in 1972.

NCR's year-end earnings showed a record \$72 million or \$3 a share compared with a loss of \$59.2 million a year ago including a charge of \$70 million.

Worldwide revenues of \$1.8 billion also set a new record and represented a 17% increase over the previous high of \$1.56 billion recorded in 1972.

Fourth quarter earnings of \$34.7 million or \$1.40 a share on revenues of \$577.4 million were also new records for any quarter in the company's history.

Year-end charges caused a 1972 fourth quarter loss of \$63.2 million or \$2.83 a share on revenues of \$456.7 million. The charges primarily reflected the impact of the firm's transition from mechanical products to electronic products, NCR noted.

President William S. Anderson attributed the favorable results to reduced operating

(Continued on Page 31)

## Eniac Decision Could Impact IBM Case

By Jerry Cohen, Esq.

Special to Computerworld

MINNEAPOLIS — What started out as a patent infringement case seven years ago may now turn out to be a blockbuster decision in the antitrust arena — and IBM wasn't even a defendant.

In the case Sperry Rand sued Honeywell, charging infringement of Sperry's

### VIEWPOINT

patent on Eniac. The judge here not only held the patent invalid, but also blasted a "secret" agreement over the patent between IBM and Sperry Rand.

The judge condemned a 1956 agreement between Sperry and IBM which cross-licensed their tabulating equipment and EDP patents and technology (and under which IBM paid Sperry \$11 million) as "an unreasonable restraint of trade and as an attempt by IBM and Sperry to strengthen or solidify their monopoly in the EDP industry."

The specific impact of the agreement was speculative. Neither IBM nor Sperry used the EDP technology they acquired from each other. But the court was impressed that they each learned what not to develop and had a better picture of available design options than any of their competitors.

It was enough to produce a court finding that the agreement "was stifling on the growth of EDP competitors and the EDP industry generally; since 1956, all EDP industry members except IBM and Sperry (and CDC to a limited degree) have been operating under artificial EDP market constraints imposed by having had to compete against the combined technological portfolios of IBM and Sperry during the critical starting and developmental period of the EDP industry."

The finding is an extraordinary one and will have an impact in the pending suits

against IBM, particularly the government's case pending in New York. The government is charging monopolization, not just the act of being a monopoly.

The difference is that monopolization usually depends on a showing of some conduct that can be characterized best as antisocial and such a finding results in a decree to dissipate the effects of the monopolization while a finding of monopoly through the natural play of market forces and efficiency ends in a *mea culpa* verdict.

IBM was not a party in the proceeding here and had no chance to tell its side of the story developed there. No finding of the Minnesota case will be binding on the New York court or the other courts trying IBM cases.

But the courts will all be looking to IBM to rebut the court's conclusions that:

- IBM and Sperry each had a duty to make full disclosure of the 1956 agreement to other members of the industry.
- IBM said to Sperry that IBM would make its patents and technical information available to all competitors who requested it, and then "did nothing effectual to implement this requirement."
- IBM's 1956 consent decree arising out of the government's 1952 suit prohibited IBM from exchanging disclosures of technical information on an exclusive basis and that IBM did so *de facto*.
- IBM and Sperry put out a press release summary of the agreement which was misleading and they agreed that there would be no publicity of any of their technology-sharing activities.
- The competitive disadvantage suffered by Honeywell as a result of the agreement was \$35 million to \$55 million in excess R&D cost and loss of opportunity to gain a number two EDP market share position as early as 1960-1964 which would have yielded \$360 million to \$517 million more of revenues than it actually realized in the subsequent years.

• IBM "knew" that Dr. John W. Mauchly [together with J. Presper Eckert, a joint applicant of the Eniac patent application] "derived" the invention from Dr. John V. Atanasoff of Iowa State University and withheld this and other patent invalidating information from the U.S. Patent Office. "IBM had more to lose than to gain by invalidating the Eniac patent application."

These conclusions did not result in a big award of damages because they were made in the context of a case involving the wrong parties at the wrong time.

During the period from the 1956 agreement to the 1967 start of the lawsuit, the market position of Sperry and its predecessors declined from 45% to 10%.

The court was moved to the disclaimer at one point of its opinion that IBM is not the defendant here, but it repeatedly referred to IBM as a "coconspirator."

The government's case against IBM in New York will not be saddled with the problems of the statute of limitations, choice of defendant, risk of catastrophic loss in case the patent is upheld, and lack of staying power which prevented Honeywell from reaping a bonanza damage award in Minnesota.

However, the government's effort to replicate the Minnesota verdict in New York will not be a walk-in.

Many of the court's conclusions are more viewpoint than verdict and some are, in any case, inconsistent with each other and the reported evidence.

For instance, IBM's failure to tell the Patent Office about Mauchly's derivation of Eniac from Atanasoff has to be balanced against the court's other findings that:

- Atanasoff's calculating machine of circa 1940 was not an all electronic data processor. It had mechanical communication switches.
- IBM had no standing under Patent Office rules to raise such a point.

## Judge Excludes Telex Decision in Trial Of IBM-Levin Case

By E. Drake Lundell Jr.

OF THE CW STAFF

NEWARK, N.J. — IBM has won the first test of whether the Telex antitrust decision against it could be used by other parties suing the firm.

Judge Whipple of the Federal District Court here recently denied a request by Howard Levin and Levin Computer Corp. to have the Telex decision applied to its case against IBM.

The judge, in making the ruling on a request for a summary judgment filed by Levin, indicated that since the Telex case had been certified for appeal its judgment against IBM could not be considered a reason for such a judgment.

The issue is important since several of the other suits against IBM — notably the one filed by Calcomp — have asked the relevant courts to apply the Telex decision to their cases under the doctrine of collateral estoppel, which holds that a decision in one federal court should be binding in other federal suits.

The judge found that government actions cannot be considered in other cases while on appeal, and therefore "So much less so should private antitrust litigation which has been certified for appeal by the trial judge."

The judge also observed that the issues in the Telex case were substantially different than those raised in the Levin Computer Corp. case in that the Telex decision dealt with plug-in peripheral equipment, while the Levin action deals with built-in peripheral units.

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# Japan Boosts Home DP Budget

By Molly Upton  
Of the CW Staff

TOKYO - Japan's Ministry of International Trade and Industry (Miti) is mounting a multi-pronged effort to foster the development of the domestic computer industry.

Miti has budgeted about \$65 million for the industry in 1974, an increase of nearly 11% over 1973, in addition to a three-year, \$19 million subsidy to the Japan Electronic Computer Co. (Jec) for purchase of used computers returned to the manufacturers, according to reports in *The Japan Economic Journal (JEJ)* and *EDP Japan Report (EDP/JR)*.

The budget allocation is considered favorable as the government is expected to tighten the national budget for 1974, the *JEJ* said.

The move is seen by sources here as being designed to foster the domestic computer industry to compete against IBM when import and capital liberalization occurs in late 1975.

Among the development projects in the government national budget are about \$50 million for new types of computers; \$4.7 million for peripherals; \$6 million for integrated circuits; and \$4 million for software.

In addition, Miti decided to nearly double the size of the Japan Development Bank's loans to computer manufacturers to \$75 million in fiscal 1974 and to apply a special interest rate of 7.5% for the bank's lendings, according to the *JEJ*.

As a separate item, Miti earmarked a subsidy of

## International News

\$3.3 million for the semigovernmental Information Technology Promotion Agency.

These funds will be used to aid in the development of "advanced universal purpose computer programs on a consignment basis, buying and leasing of such programs and research on pattern information systems," the article said.

The subsidy plan for relieving manufacturers of their stock of used computers is seen as another move to bolster the industry.

The Jec will buy up the machines from the six domestic manufacturers, with the government subsidizing 30% of the purchase, and then lease the machines to Chambers of Commerce and Industry and the Federation of Commerce and Industry Associations throughout the country.

To kick off the plan, \$2.6 million has been allocated for 1974, and an estimated 25 associations will be provided with computers, according to *EDP/JR*.

In 1971, manufacturers probably held used machines originally worth \$306.5 million, and \$321 million in 1972. These are expected to exceed \$576 million in 1974.

Purchasing these machines will "go a long way toward improving the position of Japanese computer makers," *EDP/JR* said.

## Soviet DPer Urges More T/S in Russia

MOSCOW - Time-sharing should be more widely used in the Soviet Union, according to N. Moiseyev, deputy director of the Computing Center of the Academy of Sciences here.

He urged that his center be used as an experimental base for T/S techniques, according to a report in the *New York Times*. The center has BESM-6s, a large Soviet computer.

A lack of suitable large systems to serve as central processors for T/S systems, and minicomputers as user terminals, has hindered the use of T/S, the article indicated.

### Inefficiency Cited

Moiseyev, according to the *Times*, decried the present tendency of each major industrial plant, research institute or university to have its "own little computing center" a practice which he said results in inefficient use of computing capability.

Moiseyev proposes using minicomputers rather than simple input/output devices, so that users can perform tasks such as process control on the minis while having available the larger T/S CPU for bigger problems.

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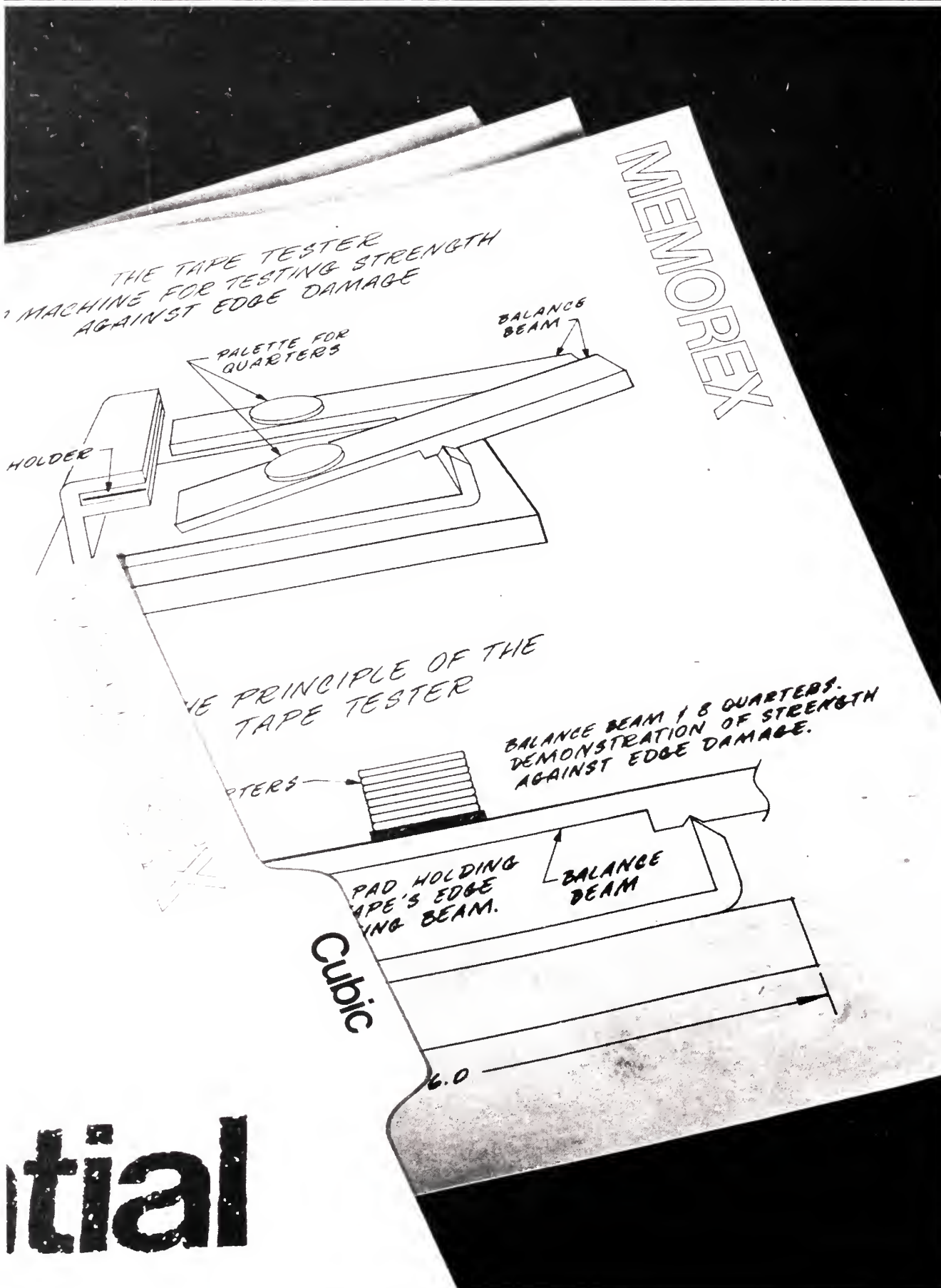
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|  |   | 1973                    | 1974  | 1975  |
| Data Entry Terminals   | Key-disk, Tape                            | 540                     | 600   | 630   |
|  | O/L Entry Systems                         |                         |       |       |
| Non-Programmable Terminals (Hardwired)                         | Keyboard Printers,                        | 60                      | 70    | 80    |
|  | Teletypewriter Devices                    |                         |       |       |
| Programmable Terminals (Intelligent)                           | Stand-alone and Dual (small cluster) VDUs | 25                      | 30    | 35    |
|  | VDUs                                      | 100                     | 130   | 180   |
|  | • Interactive                             |                         |       |       |
|  | • Batch                                   |                         |       |       |
|  | Small Batch Units                         | 110                     | 140   | 175   |
|  | Medium Batch Units                        | 60                      | 90    | 130   |
|  | Large Batch Units                         | 145                     | 210   | 280   |
|  | Subtotal:                                 | \$440                   | \$600 | \$800 |

# Incoterm Aims to Boost Coverage Of Intelligent Terminal Market

By Patrick Ward  
Of the CW Staff

NATICK, Mass. With the introduction of the SPD-320 and SPD-20/20 intelligent terminals [CW, Feb. 13], Incoterm Corp. will have a line of models covering almost the entire programmable terminal market, according to President Jean Farion.

The firm's SPD-320 competes directly with IBM's 3270 in the clustered display market that Incoterm predicts will reach \$130 million in shipments this year and \$180 million in 1975.

Since IBM began 3270 shipments in 1972, an estimated 15,000 of the termi-

nals have been delivered, and the shipment rate is expanding by about 40% annually, Incoterm believes.

The SPD-20/20 is aimed at the rest of the intelligent terminal, remote batch and small systems market, the firm said. It contains up to 32K of programmable core storage and can handle up to 16 display stations.

The combined clustered display and medium and large batch terminal markets were worth over \$300 million in 1973 shipments, the company estimated.

The entire intelligent terminal market, including stand-alones and large batch systems, is expected to increase from \$440 million in 1973 to \$600 million in 1974, based on the value of equipment shipped.

# DP Units Shine for Three Mainframers

(Continued from Page 29)

costs and an increase in overall productivity resulting from a worldwide reorganization, consolidation and streamlining program, to substantially improved results in the company's international operations, and to better margins on NCR's newest products.

Equipment bookings rose 16% over the previous record established in 1972.

Approximately 60% of the incoming equipment business in the U.S. consisted of orders for computer systems, point-of-sale systems for retail stores and other types of electronic data terminals.

Other major contributors to NCR's 1973 results included a 14% gain in field engineering revenues, a 16% increase in the company's paper business, an 18% rise in the sale of business forms and other supplies and a 19% growth in the revenues of NCR's worldwide network of 81 DP centers.

At Honeywell, earnings from the computer segment increased to 41% of corporate earnings before unallocated items,

compared with 39% in 1972. Honeywell's computer business again contributed about half of the firm's total volume in 1973.

Chairman James H. Binger said he expected reasonable improvement in the company's 1974 results, despite uncertainties posed by inflation and energy shortages.

In addition, the computer business earnings registered a higher percentage rise than all but one other segment, jumping 27% to \$93 million in 1973 from \$73 million in 1972. The industrial products sector's earnings doubled to \$34 million.

Worldwide DP sales and rental revenues totaled \$1.177 billion, up 11% from \$1.061 billion a year ago.

DP rental and service revenues rose 10% to \$663 million and accounted for the same percentage of total revenues as last year, the firm said.

In the fourth quarter computer rental and service revenues rose more than 14% above last year's comparable period to \$177 million. Sales revenues also "satis-

factorily exceeded" the fourth quarter of 1972, the firm said.

For the year, shipments rose about 15%, primarily due to volume installations of Series 6000, 2000 and Model 58 systems.

Despite the record volume of shipments, net backlog at year end was ahead of last year. Two hundred Series 6000 systems were shipped in 1973.

Honeywell's worldwide corporate revenues rose 12% during the year to \$2.391 billion compared with \$2.125 billion in 1972.

Earnings, including special credits, rose 26% to \$103.9 million or \$5.46 a share from \$82.3 million or \$4.38 a share last year.

Fourth quarter sales totaled \$708 million, up from \$631 million a year ago. Earnings reached \$43.9 million or \$2.30 a share compared with \$40 million or \$2.12 a share.

Total sales outside the U.S. approached \$1 billion for the first time, reaching \$991 million compared with \$838 million in 1972.

This increase will be faster than the growth rates of either data entry or non-programmable (hardwired) terminals, Incoterm said.

Data entry terminal shipments will rise from \$540 million in 1973 to \$600 million this year, Incoterm's figures show.

The firm's present SPD-1020 and SPD-900 products compete in the stand-alone, dual-station display and small batch areas of the intelligent terminal market.

These submarkets accounted for \$135 million in 1973 shipments, of which Incoterm believes it won about a 10% market share.

Incoterm sees its main competitors in the intelligent terminal field as Beehive, Burroughs, Courier, Data 100, Datapoint, 4-Phase, IBM, Sanders and Sycon, a spokesman said.

"We claim to be the most muscular of the independents, particularly for customers with individual requirements," an Incoterm spokesman said.

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Roy Freed has specialized in computer-related legal matters for many years. He has served as inside counsel for a major manufacturer of digital computers, and is currently engaged in private practice with a prominent Boston law firm.

He has authored many articles on the various legal aspects of computers including "Computer Frauds - A Management Trap" (*Business Horizons*) and a book entitled "Computers and Law - A Reference Work." Mr. Freed will personally conduct the entire seminar.

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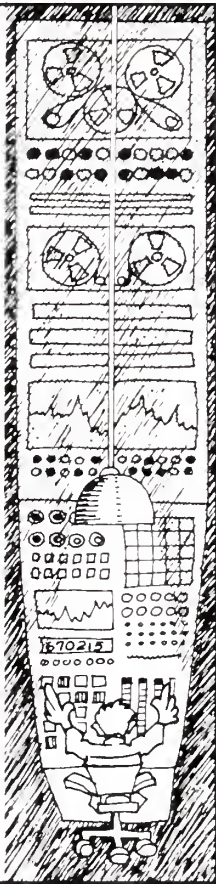
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## Cbema Head Urges Understanding Privacy Issue Called Complex

WASHINGTON, D.C. — The proliferation of bills being introduced concerned with protection of individual privacy points up the need for a clear understanding of the benefits versus the cost trade-offs to be obtained, Peter F. McCloskey testified before the House Subcommittee on Foreign Operations and Government Information.

"All interested parties — the government, user organizations, manufacturers and other concerned organizations and individuals need to examine, study and understand this subject," he added.

McCloskey, president of the Computer and Business Equipment Manufacturers Association (Cbema), said the key to an effective approach to resolving this concern is understanding that three intertwined aspects exist; the individual's right to privacy; confidentiality, which involves the treatment of personal information, once on file; and data security, or the means of assuring confidentiality.

"Legislative policy-setting is, however, complicated by the fact that privacy issues usually occur as ancillary parts of legislation addressing other subjects," he observed.

Cbema believes the proper balance needed to ensure the protection of individual rights while not curtailing general benefits to society from modern technology can be achieved, he said.

Cbema members, other firms, government agencies and researchers have been working in the area of safeguards.

In addition to helping evolve procedural techniques for improving confidentiality,

computer manufacturers' "most direct contributions are in the development of safeguards that can be built into the computer system itself."

Controlled access to data bases from terminals through the use of passwords, or activation of terminals by keys or badges are examples of some of these approaches, he said.

In addition, some systems may allow a user to access only certain files, or parts of records, he noted.

"In this case the computer system offers greater security than a manual filing system," McCloskey observed.

## Small DP Firms Detailed In Management Analysis

ROCKVILLE, Md. — Information on several small computer firms is available with a subscription to the RCGI Management Analysis of Small Computer Industry Firms offered by Rockville Consulting Group, Inc.

A subscription covers reports of about 30 firms in the next few months plus a semiannual update. Additional firms will be added at the rate of about 30 per year, and all reports are updated and rewritten annually, the firm said.

The reports include information on personnel, products, marketing, product development, manufacturing and facilities, financial arrangements and financial analysis.

The Rockville Consulting Group, Inc. can be reached through P.O. Box 1364, 20850.

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- EDP services and the autotransaction industry — status and future
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Special address by Dr. Herbert Grosch

Dr. Grosch, editorial director of *Computerworld*, former head of the National Bureau of Standard's research program in computing technology, and renowned author of "Grosch's Law," will give a luncheon talk on *Computing: The Next 10 Years*. He will describe the

possible in terms of hardware and software technology, but will also cover the probable changes in worldwide user acceptance of new techniques.

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*Special note to financial analysts: We've set aside a special day (Feb. 26) for you in New York. It will cover the material included in our Industry Briefing Session, but the discussion — and audience participation — will be aimed at investor interests. Join some of Wall Street's best computer watchers at this seminar!*

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# Itel, Dearborn-Storm To Sell 360 Portfolios

By a CW Staff Writer

Within a week, two lessors revealed plans to divest themselves of their 360 portfolios and concentrate their efforts elsewhere. Itel Corp. is discontinuing its 360 leasing operations and selling its \$200 million portfolio of 360s to end users over the next 18 to 24 months.

Dearborn-Storm Corp. has agreed in principle to sell for \$17 million in cash its 360 portfolio to a group of private investors.

The purchasers intend to employ the current management and staff of Dearborn's leasing operations.

Divestiture allows Dearborn to concentrate "all of our management efforts and financial resources on our primary business," servicing the worldwide needs of the offshore petroleum industry," said Arthur Weiss, chairman of the board.

The portfolio, valued at about \$30 million, was profitable and contributed a positive cash flow, observed Jerome T. Weil, vice-

president, finance. "It was a question of the direction the company wanted to go in," he said.

## Itel's Motives

An Itel spokesman said the 360 leasing business was profitable, but added the company felt it could redeploy its marketing personnel more effectively.

"We don't plan to get out of data processing, but we do not plan to own, other than in a small way, IBM equipment," said Edward Hall, treasurer.

Funds from the sale of the 360 portfolio will go to repay debt and into other programs, he said.

Itel will continue to manage 370 equipment for limited partnerships set up by Itel and to market tax-oriented full payout IBM 370 leases.

Itel is a general partner in limited partnerships with about \$25 million in IBM 370 computers, according to Hall.

The sale of the 360 portfolio over the next two years is intended to eliminate any uncertainty associated with the period beyond that, Hall said.

The 360 effort, he said, "does not reflect the direction the company wants to take in the future."

"It is not as profitable as other programs at this point."

"The 360 portfolio is in extremely good shape. More than 90% is on lease or committed to lease," he said.

Itel's discontinued operation required a \$30 million charge against 1973 results.

The Dearborn-Storm transaction will result in a loss on disposal of the portfolio, including phase-out costs, of about \$9 million, net of applicable tax benefits of about \$4.2 million, the company said.

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## Keating Named Honeywell Chief

MINNEAPOLIS Stephen F. Keating has been named chief executive officer in addition to his post as president of Honeywell, Inc.

James H. Binger, chairman and former chief executive, will continue as chairman, concentrating on an examination of the function of the board of directors and the development of viewpoints on important public issues.

## Other Moves

Arthur Weiss, former president of Dearborn-Storm Corp., has been named chairman of the board and chief executive officer of the firm. Charles R. DeLay

## Executive Corner

was appointed president and chief operating officer. DeLay was formerly president of Dearborn's Storm Drilling Co.

■ Parker C. Peterman has been appointed vice-president, treasurer, and manager of the Finance Group of Data Transmission Co.

■ Michael T. Donnelly and James E. Lawrence Jr. have been appointed vice-presidents of Information Sciences, Inc.

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**Programmer** to assist in the design and implementation of a management information system. Further, you will be responsible for providing programming and support services for existing data systems. Applicants are required to have 1-3 years of 360/370 DOS programming experience with some knowledge of OS, COBOL and general systems experience is also required. Teleprocessing knowledge is desirable. Salary in the low to mid teens.

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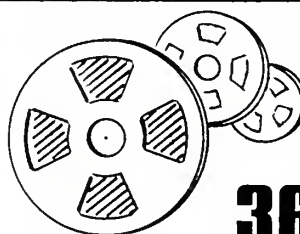
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|--|--|---|---|---|--|---|--|--|---|---|---|---|---|---|---------------|--|------------|----------|------|--------|----------------------|--------|-----------------|--------|------------|--------|----------------------|--------|-------------|--------|-----------------------|--------|-----------------|--------|------------|--------|--------------------|--|---------------|--|--|---------|----------|--------|---------|--------|------------|--------|------------|--------|--------------|---------|-----------------|----------|---------------|--------|------------|----------|------|--------|----------------------|--------|-----------------|--------|------------|--------|----------------------|--------|-------------|--------|-----------------------|--------|-----------------|--------|------------|--------|--------------------|--|---------------|
| <h1>SYSTEMS 70</h1> <p>2200 E. Devon Avenue<br/>Des Plaines, Ill. 60018<br/>(312) 827-8135</p> <h1>360/370</h1> <h1>SYSTEMS 70</h1>  |  | <h2>IBM 360/50 CPU FOR LEASE</h2> <p>256K-2Channels-1052</p> <h3>\$3,950/MONTH</h3> <p>March '74 Thru March 31, '75<br/>Includes Property Taxes<br/>Extra Memory Available</p> <p>Contact A.W. Kelly</p> <h2>PULLMAN INCORPORATED</h2> <p>300 Three Greenway Plaza E<br/>Houston, Texas 77046<br/>(713) 622-6570</p>  |   | <p>WE PURCHASE 360/20/30<br/>WE LEASE &amp; SELL 360/20/30<br/>THIS WEEK 360/20<br/>SPECIALS: Bi-Synch</p> <p>For Sale<br/>029, 059, 083, 084, 026, 557<br/>All 360/20 Systems</p> <h2>SIMPLICITY COMPUTER CORP.</h2> <p>257 W. 39th Street<br/>New York, N.Y. 10018<br/>(212) 695-3010</p>                 |  | <h1>FOR SALE</h1> <p>Recently acquired<br/><b>Telecommunication Time Division Multiplexer System</b></p> <p>Intermix programmable speed to 9,600 baud. System designed as front-end for real time order entry. For full description, pricing and support, call or write:</p> <p>Mr. Bob Bartoletta<br/>930 N. Beltline • Suite 140<br/>Irving, Texas 75061<br/>214/252-7502 • TWX 910-860-5761</p> <h2>vardon &amp; associates, inc.</h2> |  | <h2>FOR SALE</h2> <h1>Audio Response System</h1> <p>with related computer peripheral equipment.<br/>Contact Al Ayres<br/>at (206) 682-8482</p> |   | <h2>Four 2401-2 (9-track) tapes</h2> <p>\$4,250 each<br/>One 2803-1 controller \$9,500<br/>Entire group: \$23,500<br/>Immediate Delivery<br/>FOB California</p> <h2>tbi</h2> <p>TBI Equipment Div. Time Brokers, Inc.<br/>500 Executive Blvd.<br/>Elmsford, N.Y. 10523<br/>(914) 592-4065</p> <p>Nationwide broker/dealers of DP equipment &amp; computer time<br/>Boston Chicago Elmsford N.Y. Los Angeles<br/>New York City Washington D.C. and San Francisco<br/>Member Computer Dealers Association</p> |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| <h2>Here's the word from ITEL about buying or selling a used IBM 370.</h2> <p>If you're buying, ITEL can provide the exact configuration you want—when you want it (And we won't just quote you a price. We'll quote you a serial number, too.)<br/>If you're selling, we're ready with cash.<br/>Either way call the Computer Sales Corporation at ITEL.</p> <p>Dick Hynes at (415) 983-0278.<br/>Rick Becker at (415) 983-0260, or<br/>Fred Hegeman at (415) 983-0410.</p> <p>155 s available.<br/>135 s, 145 s, 155 s and 165 s needed</p> <h1>ITEL CORPORATION</h1>  |  | <h2>360/20 SYSTEMS</h2> <p>One with Bi-Synch<br/>Others with Disk &amp; Tape</p> <p>CMI Corporation<br/>16225 E. Warren Ave.<br/>Detroit, Mich. 48224<br/>(313) 889-0440</p> <p>CMI Company<br/>408 Bartlett Bldg.<br/>76 University Ave. W.<br/>Windsor, Ontario N9A 5N7<br/>(519) 258-8910<br/>Member Computer Dealers Association</p>  |   | <h2>FOR SALE</h2> <p>8K of core<br/>for Honeywell Sysytem<br/>standard for M-1 or<br/>M-3 drawer types.<br/>Controller for Series 200<br/>Card Reader/Punch &amp; Printer</p> <h2>WANT TO BUY</h2> <p>Disk Drives &amp; Controller<br/>for Honeywell Series 200<br/>Contact Mike Canan<br/>206-285-0330</p> |  | <h2>SALE OR LEASE</h2> <p>360 Systems, 1401 Systems<br/>2400 Tape Drives, 2311 Disk Drives<br/>1620 Systems, 029, 206, 059<br/>All Types Unit Record Equip.<br/>Incl. 082, 083, 402, 407, 514, 519, 557</p>   |  | <h2>EQUIP. WANTED</h2> <p>360 Systems, 1401 Systems<br/>Tape Drives<br/>All Types Of<br/>Card Equipment<br/>029, 059, 026</p>                  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
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| <h2>360 * BUY * 370</h2> <p>* LEASE/SUBLEASE *</p> <p>AVAILABLE MOST 360 MODELS</p> <p>Printers — Readers — Punches</p> <table border="0"> <tr> <td>1403-N1</td> <td>Printers</td> </tr> <tr> <td>1403-2</td> <td>Printer</td> </tr> <tr> <td>2821-1</td> <td>Controller</td> </tr> <tr> <td>2821-2</td> <td>Controller</td> </tr> <tr> <td>2540-1</td> <td>Reader/Punch</td> </tr> <tr> <td>2501-82</td> <td>1000 CPM Reader</td> </tr> </table> <p>Disk</p> <table border="0"> <tr> <td>2314 CDC</td> <td>4-68 Spindles</td> </tr> <tr> <td>2841-1</td> <td>Controller</td> </tr> <tr> <td>(4) 2311</td> <td>Disk</td> </tr> </table> <p>Tapes</p> <table border="0"> <tr> <td>2404-3</td> <td>Control &amp; 90KB Drive</td> </tr> <tr> <td>2402-3</td> <td>Two 90KB Drives</td> </tr> <tr> <td>2401-3</td> <td>90KB Drive</td> </tr> <tr> <td>2403-2</td> <td>Control &amp; 60KB Drive</td> </tr> <tr> <td>2401-2</td> <td>60KB Drives</td> </tr> <tr> <td>2404-1</td> <td>Control &amp; 30KB Drives</td> </tr> <tr> <td>2402-1</td> <td>Two 30KB Drives</td> </tr> <tr> <td>2401-1</td> <td>30KB Drive</td> </tr> </table> <p>(7) 2403 90KB MAI Drives</p> <p>3803-1 Controller</p> <p>(8) 3420-5 Tape Drives</p> <p>Misc.</p> <table border="0"> <tr> <td>2701-1</td> <td>Sync. Data Adapter</td> </tr> <tr> <td></td> <td>Feature #7698</td> </tr> </table> <h2>LUNCEFORD &amp; ASSOCIATES</h2> <p>Valley View Bank Bldg.<br/>Overland Park, Kan. 66212<br/>(913) 381-7272</p>   |  | 1403-N1   | Printers  | 1403-2  | Printer  | 2821-1  | Controller   | 2821-2   | Controller  | 2540-1  | Reader/Punch  | 2501-82   | 1000 CPM Reader   | 2314 CDC  | 4-68 Spindles | 2841-1   | Controller | (4) 2311 | Disk | 2404-3 | Control & 90KB Drive | 2402-3 | Two 90KB Drives | 2401-3 | 90KB Drive | 2403-2 | Control & 60KB Drive | 2401-2 | 60KB Drives | 2404-1 | Control & 30KB Drives | 2402-1 | Two 30KB Drives | 2401-1 | 30KB Drive | 2701-1 | Sync. Data Adapter |  | Feature #7698 | <h2>360 * BUY * 370</h2> <p>* LEASE/SUBLEASE *</p> <p>AVAILABLE MOST 360 MODELS</p> <p>Printers — Readers — Punches</p> <table border="0"> <tr> <td>1403-N1</td> <td>Printers</td> </tr> <tr> <td>1403-2</td> <td>Printer</td> </tr> <tr> <td>2821-1</td> <td>Controller</td> </tr> <tr> <td>2821-2</td> <td>Controller</td> </tr> <tr> <td>2540-1</td> <td>Reader/Punch</td> </tr> <tr> <td>2501-82</td> <td>1000 CPM Reader</td> </tr> </table> <p>Disk</p> <table border="0"> <tr> <td>2314 CDC</td> <td>4-68 Spindles</td> </tr> <tr> <td>2841-1</td> <td>Controller</td> </tr> <tr> <td>(4) 2311</td> <td>Disk</td> </tr> </table> <p>Tapes</p> <table border="0"> <tr> <td>2404-3</td> <td>Control &amp; 90KB Drive</td> </tr> <tr> <td>2402-3</td> <td>Two 90KB Drives</td> </tr> <tr> <td>2401-3</td> <td>90KB Drive</td> </tr> <tr> <td>2403-2</td> <td>Control &amp; 60KB Drive</td> </tr> <tr> <td>2401-2</td> <td>60KB Drives</td> </tr> <tr> <td>2404-1</td> <td>Control &amp; 30KB Drives</td> </tr> <tr> <td>2402-1</td> <td>Two 30KB Drives</td> </tr> <tr> <td>2401-1</td> <td>30KB Drive</td> </tr> </table> <p>(7) 2403 90KB MAI Drives</p> <p>3803-1 Controller</p> <p>(8) 3420-5 Tape Drives</p> <p>Misc.</p> <table border="0"> <tr> <td>2701-1</td> <td>Sync. Data Adapter</td> </tr> <tr> <td></td> <td>Feature #7698</td> </tr> </table> <h2>LUNCEFORD &amp; ASSOCIATES</h2> <p>Valley View Bank Bldg.<br/>Overland Park, Kan. 66212<br/>(913) 381-7272</p> |  | 1403-N1 | Printers | 1403-2 | Printer | 2821-1 | Controller | 2821-2 | Controller | 2540-1 | Reader/Punch | 2501-82 | 1000 CPM Reader | 2314 CDC | 4-68 Spindles | 2841-1 | Controller | (4) 2311 | Disk | 2404-3 | Control & 90KB Drive | 2402-3 | Two 90KB Drives | 2401-3 | 90KB Drive | 2403-2 | Control & 60KB Drive | 2401-2 | 60KB Drives | 2404-1 | Control & 30KB Drives | 2402-1 | Two 30KB Drives | 2401-1 | 30KB Drive | 2701-1 | Sync. Data Adapter |  | Feature #7698 |
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| 1403-2   | Printer  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2821-1   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2821-2   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2540-1   | Reader/Punch   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2501-82  | 1000 CPM Reader  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2314 CDC   | 4-68 Spindles  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2841-1   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| (4) 2311   | Disk   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2404-3   | Control & 90KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2402-3   | Two 90KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-3   | 90KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2403-2   | Control & 60KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-2   | 60KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2404-1   | Control & 30KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2402-1   | Two 30KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-1   | 30KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2701-1   | Sync. Data Adapter   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
|  | Feature #7698  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 1403-N1  | Printers   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 1403-2   | Printer  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2821-1   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2821-2   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2540-1   | Reader/Punch   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2501-82  | 1000 CPM Reader  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2314 CDC   | 4-68 Spindles  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2841-1   | Controller   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| (4) 2311   | Disk   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2404-3   | Control & 90KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2402-3   | Two 90KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-3   | 90KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2403-2   | Control & 60KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-2   | 60KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2404-1   | Control & 30KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2402-1   | Two 30KB Drives  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2401-1   | 30KB Drive   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
| 2701-1   | Sync. Data Adapter   |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |
|  | Feature #7698  |   |   |   |  |   |  |  |   |   |   |   |   |   |               |  |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |  |  |         |          |        |         |        |            |        |            |        |              |         |                 |          |               |        |            |          |      |        |                      |        |                 |        |            |        |                      |        |             |        |                       |        |                 |        |            |        |                    |  |               |



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| <div><h3>ILLINOIS</h3><div><b>IBM 360/370 USERS</b><br/>Computer Time Available</div><div><b>370/158</b> 2 meg, 3 3330 (32m), 3 2314 (24m) 12 3420-5 tape, 2 1403, 3211.<br/>OS/VS2, RJE, IMS, TSO, DOS emul.<br/>24 Hours - 7 Days<br/>CAN YOU BEAT<br/>8.7 cent/sec for a 64K region?</div><div><b>370/155</b> 2 meg, 3330 (8m), 2314 (8m), 10 3420-5 tape.</div><div><b>370/155</b> 144K, 1 2314, 4 2311, 6 3420-5 tape.</div><div><b>370/135</b> 240K, 4 3330's<br/>1 2314, 6 3420-5 Tape.</div><div><b>360/30</b> 64K 5 3420-3dd Tape, 4 2311's</div><div>FOR FURTHER INFORMATION<br/>CALL RON ELLIS<br/>(312) 346-1331</div><div><b>computer research company</b><br/>200 N. Michigan P.V.<br/>Chicago, Ill. 60601<br/>Largest Computer Time Sales Co.</div></div> | <div><h3>NEW YORK</h3><div><b>IBM Computer Time</b></div><div><b>370/155</b> 1 5 meg, (2) 3330, 2319, (24) 3420-7, (5) 1403<br/>OS, RJE, TSO, DOS emul</div><div><b>370/135</b> 192K, 3330, 2319, (8) 3420-5, (2) 1403</div><div><b>1287 Optical Scanner</b><br/>Very attractive rates avail. on all shifts<br/>24 Hrs - 7 days<br/>Contact:<br/>Stu Kerievsky<br/>(212) 564-3030<br/>DATAMOR<br/>132 West 31 Street<br/>New York, N.Y. 10001</div></div> <div><h3>NEW JERSEY</h3><div><b>360-40</b><br/>Computer Time for Sale<br/>All Shifts<br/>128K<br/>8 2314s 4 2402 Mod 2s<br/>1401 Compatibility<br/>2311 Disk compatibility<br/>2 Channels, Floating point decimal arithmetic, Storage Protect, etc.<br/>COME TALK TO US!!<br/>Contact Lee Gruber<br/>1259 Route 46<br/>Parsippany, N.J.<br/>Tel. 263-0060</div><div><b>IBM 370/135</b><br/>Computer Time Available<br/>6-3330 1-1403N1<br/>1-3505 1-3525<br/>Memorex 1603 Microfilm Printer<br/>Telecommunications Capability<br/>Use Your Own System Or<br/>Our DOS-VS RES With<br/>Grasp/VS Spooler<br/>Scratch Packs Available<br/>For Further Information Call:<br/>Jay Pursell or Cliff Johnson<br/>(609) 392-3111 X276 Gould Inc.<br/>Trenton, New Jersey<br/>REASONABLE RATES</div></div> | <div><h3>SYSEX</h3><h2>LOOKING FOR SOFTWARE?</h2><p>Free Software Search and Package Appraisal Service</p><p>Our job is to help you locate the software packages which best meet your needs. There is no charge to you for this service. Write on your company letter-head or call:</p><p><b>Systems Exchange Co.</b><br/>1034 Colorado Ave.<br/>Palo Alto, Calif. 94303<br/>(415) 328-5490</p><h3>SYSEX</h3></div> <div><h3>COMPUTING'S PREMIER INQUIRY SYSTEM</h3><h2>QUERY3</h2><p>Simple English inquiry<br/>Multiple Files<br/>Writes Reports<br/>Complex selection<br/>Full power computation<br/>Produces output files<br/>Blue Ribbon users list<br/>Most computers</p><h3>ANEX</h3><p><b>AZREX INC.</b><br/>215 Middlesex Turnpike<br/>Burlington, Mass. 01803<br/>(617) 272-8750</p></div> | <div><h3>COMPUTERIZED ACCOUNTS RECEIVABLE</h3><h4>Features</h4><ol style="list-style-type: none"><li>1. Automatic Cash</li><li>2. Multi-divisional</li><li>3. Cash forecasting</li><li>4. Deduction notices</li><li>5. Unearned discount</li><li>6. Dunning</li><li>7. Audit trails</li><li>8. Customized aging</li><li>9. Automatic charge-back</li><li>10. Cash tear-sheet</li><li>11. Suspense accounts</li><li>12. Expanded credit</li><li>13. General ledger totals</li><li>14. Marginal account reports</li><li>15. Credit interchange</li><li>16. On-line cash</li><li>17. Real-time credit inquiries</li></ol><h4>Benefits</h4><p>Eliminate all these headaches:</p><ol style="list-style-type: none"><li>1. Tub files</li><li>2. Late statements</li><li>3. One cash card per invoice</li><li>4. Extensive clerical effort</li><li>5. Unknown credit risks</li><li>6. Unclear detailed non-exception reports</li><li>7. Unaware credit managers</li></ol></div> <div><h3>COMPUTER SYSTEMS &amp; EDUCATION CORP.</h3><p>David Shefrin<br/>111 Ash Street<br/>E. Hartford, Conn. 06108<br/>(203) 528-9211</p><p>Thomas Welsh<br/>840 Hinckley Road<br/>Burlingame, Calif. 94010<br/>(415) 697-3317</p><h3>CSEC AR/70</h3></div> | <div><h3>AUTOCODER &amp; SPS TRANSLATED AUTOMATICALLY to BAL &amp; PL/1</h3><p>THE TOTALITARIAN SYSTEM</p><p>... The most economical, practical and quickest method of converting to the 3rd and 4th generation.</p><p>3 SERVICES OFFERED:</p><ol style="list-style-type: none"><li>1. 1420 Object to clean source de-compilation</li><li>2. 1400 Clean source to BAL translation</li><li>3. 1400 Clean source to PL/1 translation</li></ol><p>Contact: W. Small, President</p><div><b>CPU MANAGEMENT ADVISORY CORP.</b><br/>853 Broadway, N.Y. 10003<br/>(212) 777-7722</div></div> <div><h3>CATS-A/P ACCOUNTS PAYABLE</h3><h3>CATS-A/R ACCOUNTS RECEIVABLE</h3><h3>CATS-I/R INVENTORY RECORDKEEPING</h3><p>Under control of the CATS MASTER Systems Controller, provided FREE with the license of any of the CATS programs.</p><p>For information contact:<br/>Tom Leopard, President</p><div><b>COMPUTERWARES INTERNATIONAL</b><br/>P.O. Box 31205<br/>Birmingham, Alabama 35222<br/>Phone 205/592-6381</div></div>                      |
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## Sanders 2d Period Results Lower, IBM Marketing Effects Cited

NASHUA, N.H. - Citing the adverse effects of IBM marketing strategies, Sanders Associates, Inc. reported lower second quarter earnings and revenues.

In the quarter, the firm earned \$773,000 or 17 cents a share compared with \$1.1 million or 24 cents a share last year.

Revenues also declined to \$40 million from \$43.1 million.

For the six months, earnings increased slightly to \$2.15 million or 47 cents a share from \$2.11 million or 46 cents a share.

Revenues decreased, however, to \$78.7 million from \$81.8 million in the same period a year ago.

President Royden Sanders said Sanders Data Systems, the firm's DP unit, was adversely affected by IBM's earlier announcement that it would withdraw support for the software device utilized by SDS and other display terminals to communicate with IBM computers. Although IBM has reversed this policy, the "action will not undo the substantial damage already incurred," he said.

"New orders have fallen below expectations and lease terminations have in-

creased as a result of uncertainty and confusion in the marketplace directly traceable to 2260 device support and other marketing actions by IBM," he said.

## Interest Expenses Add to Mohawk Loss

UTICA, N.Y. - Interest expenses and provisions for taxes resulted in a loss of \$3.2 million or 50 cents a share for Mohawk Data Sciences Corp. in the six months ended Oct. 31.

This compares with earnings of \$301,000 or 5 cents a share in the same year-ago period.

Revenues for the period totaled \$81.6 million including sales of \$5.1 million to Randolph Peripherals Corp., compared with \$68.5 million a year ago.

President Richard P. Rifenburgh said "income before interest expense and taxes based on income showed considerable improvement over the preceding year, but higher interest rates coupled with increased borrowings resulted in a pretax deficit for the period."

## New Registrations

MEASUREX CORP., 10475 Imperial Ave., Cupertino, Calif., designer and manufacturer of digital computer process control systems, filed to register 705,331 shares of common, of which 600,000 are to be offered by the company and the rest by shareholders. The underwriter is Blyth Eastman Dillon & Co., One Chase Manhattan Plaza, New York, N.Y. 10005.

CAMBRIDGE MEMORIES, INC., 696 Virginia Road, Concord, Mass., manufacturers of memory systems and subsystems, filed to register 364,843 shares of common. The underwriter is Alex. Brown & Sons, 135 E. Baltimore St., Baltimore, Md. 01202.

PRIME COMPUTER, INC., 23 Strathmore

Road, Natick, Mass., manufacturer of mini-computers, filed to register 450,000 shares of common at an estimated \$7 per share. The underwriter is Clark, Dodge & Co., Inc., 140 Broadway, New York, N.Y. 10005.

TYMSHARE, INC., 10340 Bubb Road, Cupertino, Calif., filed to register 355,303 shares of common. The underwriters are Drexel Burnham & Co., Inc., New York, N.Y., and Hambrecht & Quist, San Francisco, Calif.

GENERAL INSTRUMENT CORP., 1775 Broadway, New York, filed to register 73,831 shares of common, which may be offered for sale from time to time by certain shareholders at prices current at the time of sale.

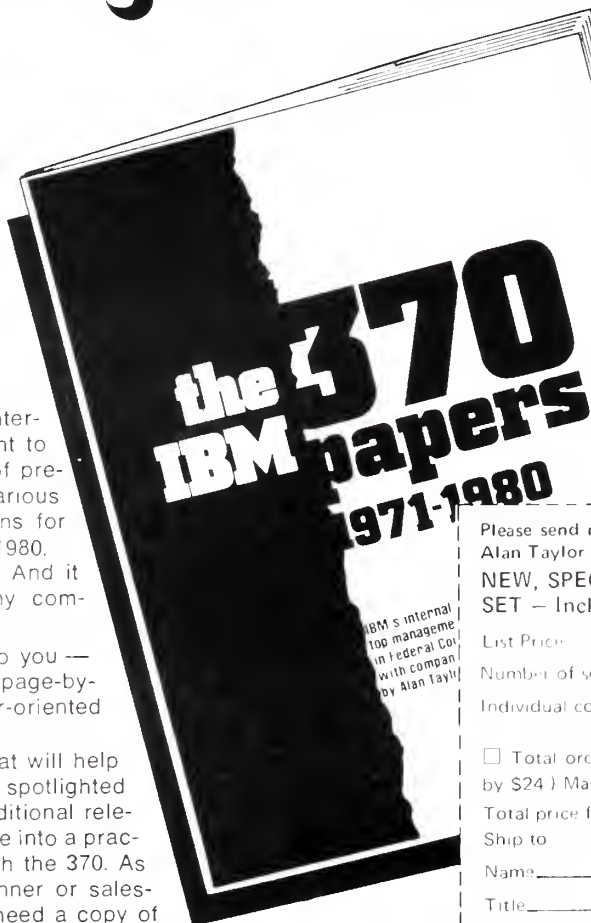
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Never before has so much confidential information been available to the computer user.

Thanks to actions in Federal Court, IBM's internal papers on its IBM 370 have been brought to light. These "Greybooks" contain a wealth of previously unavailable information on the various models of the 370 — including detailed plans for last year, next year, and every year through 1980. Even IBM salesmen haven't seen most of it. And it can be an invaluable planning tool for any computer installation.

Now these Greybook reports are available to you — in clear, easy-to-read book format — with a page-by-page commentary by the well-known, user-oriented columnist, Alan Taylor.

Almost every page has some information that will help your installation. Alan Taylor's commentary, spotlighted by a specially designed format, provides additional relevant information, and helps make each volume into a practical, useful tool for everyone concerned with the 370. As user, manager, controller, programmer, planner or salesman, there is something here for you. You need a copy of one or more of these books for your professional purposes — and you will want your colleagues to have their own copies so that you can work together.



The facts in these books are fascinating. Among other things they contain are:

- IBM's own analysis of the advantages and disadvantages of 370 models against the competition. (Your Software and Hardware experts both need this information.)
- The descriptions of the planned enhancements for System 370's — and the dates involved. (Your Financial man needs this to help with Rental/Purchase decisions.)
- IBM's plans for the 'death' and replacement of 370 models — and data about their successors. (A unique feature that everyone should read and understand.)
- IBM's use of error-containing hardware for part of the 370 line — hardware that was supposed to be scrapped.
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## Earnings Reports

| DIGITAL EQUIPMENT          |             |             |
|----------------------------|-------------|-------------|
| Three Months Ended Dec. 29 |             |             |
|                            | 1973        | 1972        |
| Shr Ernd                   | \$ .85      | \$ .42      |
| Revenue                    | 96,904,000  | 60,032,000  |
| Earnings                   | 9,924,000   | 4,601,000   |
| 6 Mo Shr                   | 1.43        | .75         |
| Revenue                    | 178,410,000 | 111,773,000 |
| Earnings                   | 16,462,000  | 8,028,000   |

| VARIAN ASSOCIATES          |            |            |
|----------------------------|------------|------------|
| Three Months Ended Dec. 28 |            |            |
|                            | 1973       | 1972       |
| Shr Ernd                   | \$ .24     | \$ .20     |
| Revenue                    | 67,393,000 | 54,798,000 |
| Earnings                   | 1,667,000  | 1,452,000  |

| WILTEK             |            |           |
|--------------------|------------|-----------|
| Year Ended Oct. 31 |            |           |
|                    | 1973       | 1972      |
| Shr Ernd           | \$ .29     | \$ .23    |
| Revenue            | 12,509,000 | 6,381,000 |
| aSpec Chg          | 9,000      | 21,000    |
| Earnings           | 404,000    | 330,000   |
| 3 Mo Shr           | .17        | .03       |
| Revenue            | 4,134,000  | 2,144,000 |
| a41,000            |            |           |
| Earnings           | 227,000    | 50,000    |

a-Consists of gain on sale of land less loss from expenses associated with relocation of operations.

| NUCLEAR DATA               |             |             |
|----------------------------|-------------|-------------|
| Three Months Ended Nov. 30 |             |             |
|                            | 1973        | 1972        |
| Shr Ernd                   | a           |             |
| bRevenue                   | \$4,374,027 | \$3,300,344 |
| Disc Op                    |             | (785,344)   |
| Tax Cred                   | 14,000      |             |
| Earnings                   | 113,608     | (1,342,615) |
| 9 Mo Shr                   | a           |             |
| bRevenue                   | 13,762,411  | 9,153,781   |
| Disc Op                    |             | (1,421,089) |
| Tax Cred                   | 144,000     |             |
| Earnings                   | 633,683     | (2,686,493) |

a-Due to limitations under a 1973 bank loan agreement, Nuclear Data has been restricted in paying preferred dividends and therefore no common share earnings have been shown. If calculated on a primary basis, however, share earnings were equal to 11 cents in the quarter and 73 cents in the nine months. b-From continuing operations.

| DPF                        |            |            |
|----------------------------|------------|------------|
| Three Months Ended Nov. 30 |            |            |
|                            | 1973       | 1972       |
| Shr Ernd                   | \$ .08     | \$ .03     |
| Revenue                    | 8,039,000  | 8,631,000  |
| Tax Cred                   | 164,000    | 65,000     |
| Earnings                   | 329,000    | 130,000    |
| 6 Mo Shr                   | .12        | .04        |
| Revenue                    | 15,979,000 | 17,578,000 |
| Tax Cred                   | 242,000    | 75,000     |
| Earnings                   | 484,000    | 150,000    |

| ENNIS BUSINESS FORMS       |            |            |
|----------------------------|------------|------------|
| Three Months Ended Nov. 30 |            |            |
|                            | 1973       | 1972       |
| Shr Ernd                   | \$ .32     | \$ .16     |
| Revenue                    | 12,895,770 | 10,813,677 |
| Earnings                   | 761,155    | 395,667    |
| 9 Mo Shr                   | .79        | .42        |
| Revenue                    | 36,558,313 | 30,988,398 |
| Earnings                   | 1,878,724  | 1,038,685  |

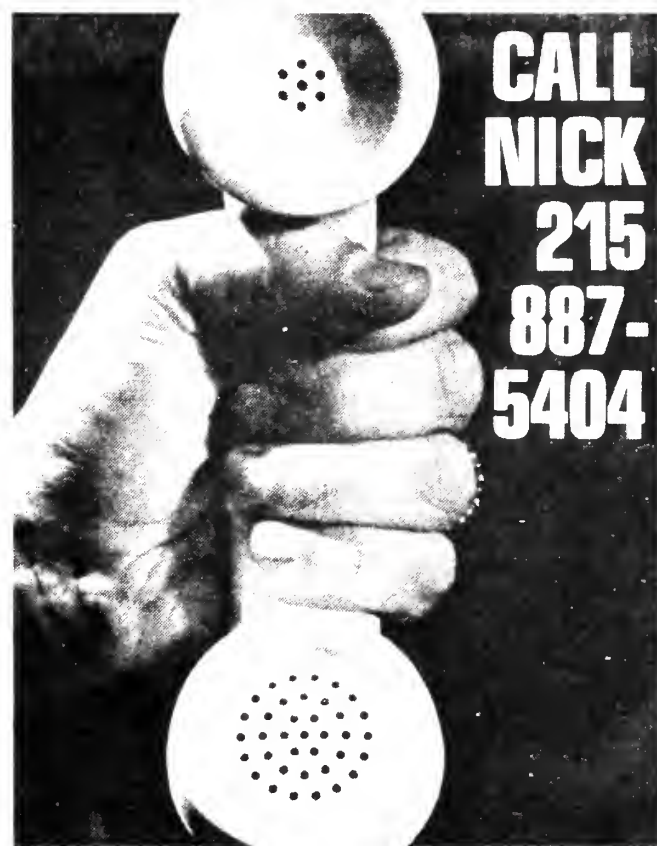
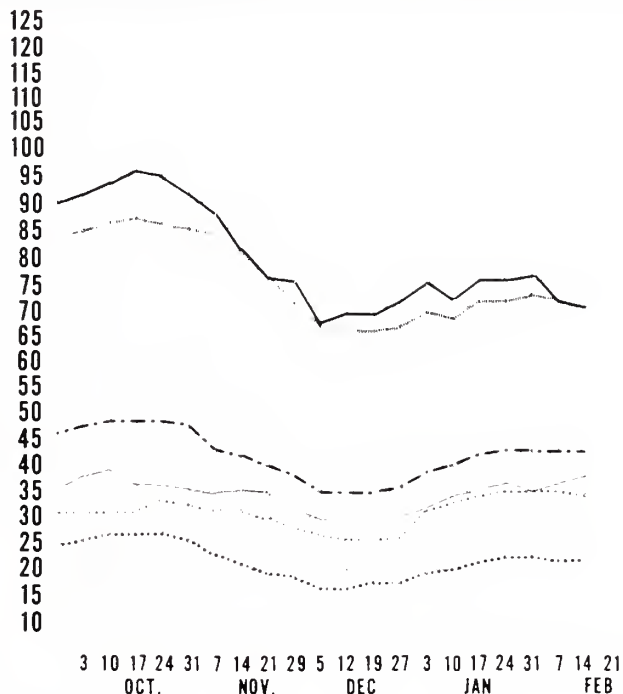
| GRANITE MANAGEMENT SERVICES |              |              |
|-----------------------------|--------------|--------------|
| Nine Months Ended Nov. 30   |              |              |
|                             | 1973         | a1972        |
| bRevenue                    | \$15,996,000 | \$17,918,000 |
| Disc Op                     | (750,000)    | (994,000)    |
| Loss                        | 490,000      | 1,766,000    |

a-Restated. b-From continuing operations.

| SPERRY RAND                |           |           |
|----------------------------|-----------|-----------|
| Three Months Ended Dec. 31 |           |           |
|                            | 1973      | 1972      |
| Shr Ernd                   | \$ .86    | \$ .68    |
| Revenue                    | 649,236   | 565,353   |
| Earnings                   | 29,555    | 23,409    |
| 9 Mo Shr                   | 2.29      | 1.77      |
| Revenue                    | 1,878,942 | 1,594,238 |
| Earnings                   | 78,706    | 60,825    |

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|------|----------|
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| 1    | 2804-2   |
| 1    | 2821-5   |
| 1    | 2030-E   |
| 1    | 1416-AN2 |
| 1    | 1403-N1  |

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TRADE QUOTES

## Computerworld Stock Trading Summary

All statistics compiled,  
computed and formatted by  
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Cambridge, Mass. 02139

| E<br>X<br>C<br>H | 1973-74<br>RANGE<br>(1) | CLOSE<br>FEB 14<br>1974 | PRICE                   |              | WEEK<br>NET<br>CHNG | WEEK<br>PCT<br>CHNG |
|------------------|-------------------------|-------------------------|-------------------------|--------------|---------------------|---------------------|
|                  |                         |                         | 1973-74<br>RANGE<br>(1) | 1974<br>CHNG |                     |                     |

## COMPUTER SYSTEMS

|   |                      |         |         |         |       |
|---|----------------------|---------|---------|---------|-------|
| N | ABBOTT CORP          | 175-252 | 178     | -10 5/8 | -5.6  |
| N | COLLINS RADIO        | 16-26   | 24 3/4  | 0       | 0.0   |
| N | COMPUTER AUTOMATION  | 6-20    | 9       | -1 1/4  | -12.1 |
| N | CONTROL DATA CORP    | 31-62   | 33 3/4  | + 3/8   | +1.1  |
| N | DATA GENERAL CORP    | 28-49   | 28 1/2  | -6 1/2  | -18.5 |
| N | DATAPoint CORP       | 10-21   | 12      | -1      | -7.6  |
| N | DIGITAL COMP CONTROL | 2-4     | 1 7/8   | -1/4    | -11.7 |
| N | DIGITAL EQUIPMENT    | 73-117  | 95 5/8  | -6 7/8  | -6.7  |
| N | ELECTRONIC ASSOC.    | 2-9     | 2 1/2   | -1/8    | -4.7  |
| N | ELECTRONIC ENGINEER  | 6-14    | 8 3/4   | -1/4    | -2.8  |
| N | FOYRDO               | 23-68   | 38 1/4  | -1 5/8  | -4.0  |
| N | GENERAL AUTOMATION   | 22-55   | 31 1/4  | -1/4    | -0.7  |
| N | GRI COMPUTER CORP    | 1-3     | 3/4     | 0       | 0.0   |
| N | HEWLETT-PACKARD CO   | 70-99   | 71 1/4  | -2 1/8  | -2.8  |
| N | HONEYWELL INC        | 68-139  | 71 3/4  | -3 1/8  | -4.1  |
| N | IBM                  | 227-340 | 226 1/2 | -9 3/4  | -4.1  |
| N | INTERDATA INC        | 7-14    | 9 7/8   | + 1/8   | +1.2  |
| N | MICRODATA CORP       | 2-10    | 3 3/8   | -1/8    | -3.5  |
| N | NCR                  | 27-46   | 33 5/8  | + 2 1/8 | +6.7  |
| N | PAYTECH CO           | 22-35   | 33 1/2  | -1 1/2  | -4.2  |
| N | SINGER CO            | 35-74   | 36      | -3/4    | -2.0  |
| N | SPERRY RAND          | 36-56   | 37 7/8  | -1 7/8  | -4.7  |
| N | SYSTEMS ENG. LABS    | 1-8     | 1 7/8   | + 1/8   | +7.1  |
| N | TEXAS INSTRUMENTS    | 83-138  | 94 1/8  | -4 7/8  | -4.9  |
| N | ULTIMACC SYSTEMS INC | 1-11    | 1 3/4   | 0       | 0.0   |
| N | VARIAN ASSOCIATES    | 10-20   | 10 1/2  | -1/4    | -2.3  |
| N | WANG LABS.           | 13-34   | 15 5/8  | -7/8    | -5.3  |
| N | XEROX CORP           | 106-169 | 105 3/4 | -8 1/4  | -7.2  |

## LEASING COMPANIES

|   |                      |       |        |       |       |
|---|----------------------|-------|--------|-------|-------|
| A | ROOTHAM COMPUTER     | 1-5   | 1 1/8  | 0     | 0.0   |
| N | SPERRY RAND          | 1-2   | 2      | 0     | 0.0   |
| N | COMDISCO INC         | 4-17  | 6 1/4  | -1/2  | -7.4  |
| N | COMPUCE GROUP CORP   | 3-6   | 5 7/8  | 0     | 0.0   |
| N | COMPUTER EXCHANGE    | 1-1   | 1 1/4  | 0     | 0.0   |
| A | COMPUTER INVESTS GRP | 2-8   | 3 1/2  | + 7/8 | +33.3 |
| N | COMP. INSTALLATIONS  | 1-2   | 1 1/4  | -3/4  | -75.0 |
| N | DATRONIC RENTAL      | 1-3   | 1 3/4  | -1/8  | -6.0  |
| N | DCL INC              | 0-3   | 5/8    | 0     | 0.0   |
| N | OFARRON-STORM        | 12-26 | 17 1/8 | -7/8  | -4.8  |
| N | OPC INC              | 3-9   | 4      | + 1/4 | +6.6  |
| N | OPR RESOURCES        | 1-3   | 3 1/4  | 0     | 0.0   |
| A | GRANITE MGT          | 2-4   | 2 3/4  | + 1/4 | +10.0 |
| A | GREYHOUND COMPUTER   | 3-6   | 4 1/2  | + 1/4 | +5.8  |
| A | ITEL                 | 4-12  | 4 1/2  | -7/8  | -16.2 |
| N | LEASCO CORP          | 8-18  | 8 3/4  | + 1/4 | +1.5  |
| N | LEASPCORP            | 1-8   | 1 1/4  | 0     | 0.0   |
| N | LECTRA MGT INC       | 1-2   | 3/4    | 0     | 0.0   |
| N | NPG INC              | 3-15  | 4 1/4  | -1/8  | -2.8  |
| A | PIONEER TEX CORP     | 4-8   | 4      | -1/4  | -5.8  |
| A | ROCKWELL COMPUTER    | 1-3   | 1 1/4  | -1/8  | -10.0 |
| N | U.S. LEASING         | 16-36 | 20 1/4 | -1/4  | -1.2  |

EXCH: N=NEW YORK; A=AMERICAN; R=PHIL-HEAT-WASH  
L=NATIONAL; M=MIDWEST; O=OVER-TH-COUNTER  
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID  
(1) TO NEAREST COLLAR

| E<br>X<br>C<br>H | 1973-74<br>RANGE<br>(1) | CLOSE<br>FEB 14<br>1974 | PRICE                   |              | WEEK<br>NET<br>CHNG | WEEK<br>PCT<br>CHNG |
|------------------|-------------------------|-------------------------|-------------------------|--------------|---------------------|---------------------|
|                  |                         |                         | 1973-74<br>RANGE<br>(1) | 1974<br>CHNG |                     |                     |

## SOFTWARE &amp; EDP SERVICES

|   |                      |       |        |        |       |
|---|----------------------|-------|--------|--------|-------|
| O | ADVANCED COMP TECH   | 1-2   | 1 1/4  | -1/8   | -9.0  |
| A | APPLIED DATA RES.    | 2-4   | 2      | 0      | 0.0   |
| O | APPLIED LOGIC        | 1-3   | 1 1/4  | -1/8   | -33.3 |
| N | AUTOMATIC DATA PROC  | 39-94 | 42 7/8 | -3/4   | -1.7  |
| N | RANDOM APPLIED SYST  | 1-1   | 3/4    | +1/8   | +20.0 |
| N | CENTRAL DATA SYSTEMS | 3-9   | 5 3/4  | -1/4   | -4.1  |
| N | COMPUTER DIMENSIONS  | 1-5   | 2 1/4  | 0      | 0.0   |
| N | COMPUTER HORIZONS    | 1-4   | 4      | +1/4   | +6.6  |
| N | COMPUTER NETWORK     | 1-5   | 1 3/4  | 0      | 0.0   |
| N | COMPUTER SCIENCES    | 2-6   | 3 3/8  | +1/8   | +3.8  |
| N | COMPUTER TASK GROUP  | 1-2   | 5/8    | +1/8   | +25.0 |
| N | COMPUTER TECHNOLOGY  | 1-3   | 1 1/2  | 0      | 0.0   |
| N | COMPUTER USAGE       | 3-9   | 3 5/8  | -1/8   | -3.3  |
| N | COMRESS              | 1-2   | 1 1/4  | 0      | 0.0   |
| N | COMSHARE             | 2-9   | 4      | +3/8   | +10.3 |
| N | COMBURA CORP         | 3-15  | 2 7/8  | -1/8   | -4.1  |
| N | DATATAR              | 1-4   | 1 3/4  | +1/8   | +7.6  |
| A | ELECT COMP PROG      | 1-2   | 1 1/4  | 0      | 0.0   |
| N | ELECTRONIC DATA SYS. | 15-56 | 15     | -1 1/8 | -6.9  |
| N | INFORMATIONAL INC    | 1-2   | 1 1/4  | 0      | 0.0   |
| N | INFORMATICS          | 2-7   | 6 3/4  | +1/8   | +1.4  |
| N | I.O.A. DATA COMP     | 1-1   | 3/4    | 0      | 0.0   |
| N | IPS COMPUTER MARKET. | 1-5   | 1 1/4  | 0      | 0.0   |
| N | KEYSAFE ASSOCIATES   | 2-5   | 2 1/2  | +1/2   | +25.0 |
| N | KEYSAFE CORP         | 4-12  | 5      | -1/4   | -2.4  |
| N | KEYSAFE INC          | 2-7   | 3      | -1/2   | -14.2 |
| A | MANAGEMENT DATA      | 1-5   | 1 1/2  | 0      | 0.0   |
| N | NATIONAL CSS INC     | 1-42  | 30     | 0      | 0.0   |
| N | NATIONAL COMPUTER CO | 1-1   | 3/4    | 0      | 0.0   |
| N | NATIONAL INFO SVCS   | 1-2   | 1 1/4  | +1/8   | +10.0 |
| N | ON LINE SYSTEMS INC  | 12-29 | 25 3/4 | -3/4   | -2.4  |
| N | PLANNING RESEARCH    | 2-7   | 2 3/4  | -3/8   | -12.0 |
| N | PROGRAMMING METHODS  | 17-25 | 17     | 0      | 0.0   |
| N | PROGRAMMING & SYS    | 1-1   | 5/8    | -1/8   | -16.6 |
| N | RADIOA INC           | 3-24  | 2 5/8  | -1/2   | -16.0 |
| N | SCIENTIFIC COMPUTERS | 1-3   | 3/4    | +1/8   | +20.0 |
| N | SIMPLICITY COMPUTER  | 1-4   | 1      | 0      | 0.0   |
| N | THE COMPUTER CENTERS | 2-9   | 8 1/2  | 0      | 0.0   |
| N | TCC INC              | 1-1   | 3/4    | 0      | 0.0   |
| N | TYMSHAP INC          | 6-13  | 7 1/2  | -1/4   | -3.2  |
| N | UNITED DATA CENTER   | 3-8   | 3 1/4  | -1/4   | -7.1  |
| A | URS SYSTEMS          | 2-8   | 2 7/8  | -1/8   | -4.1  |
| N | WYLY CORP            | 3-11  | 3 7/8  | +1/4   | +6.8  |

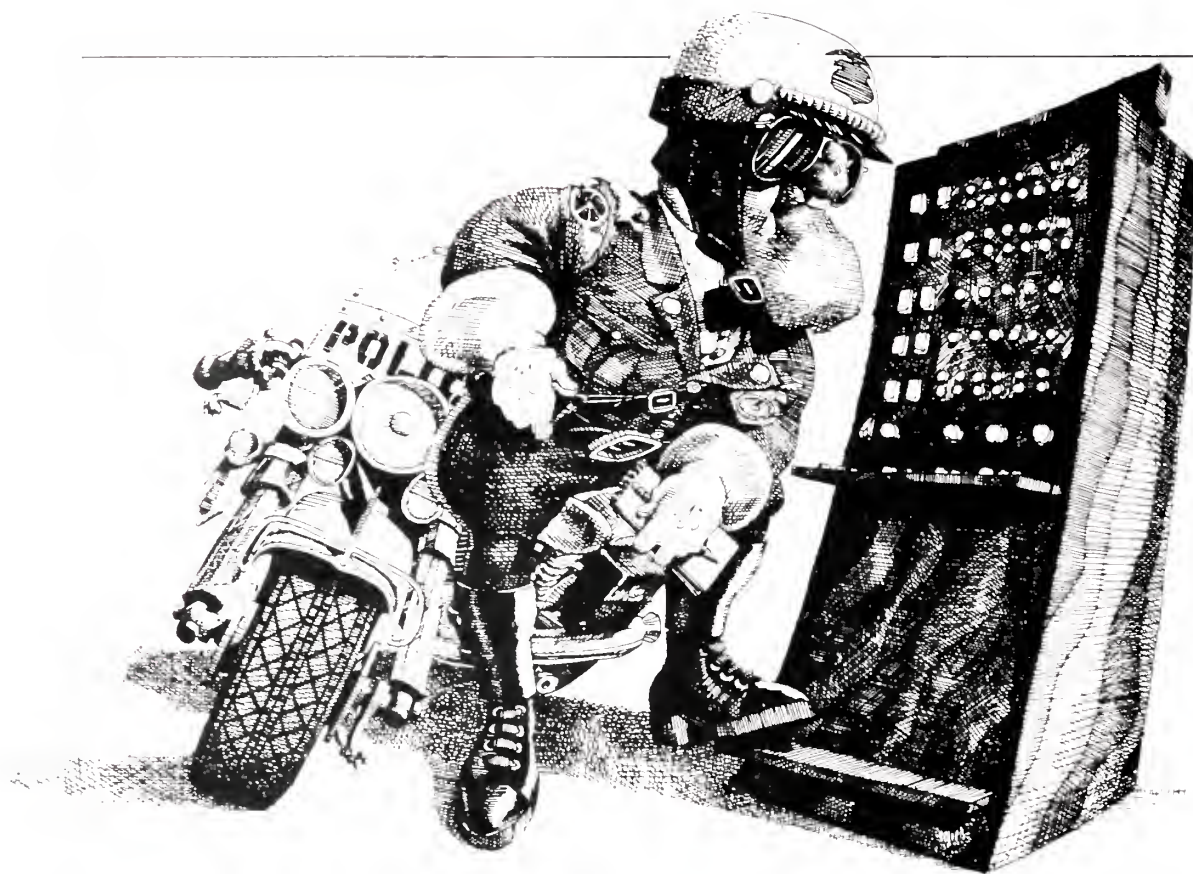
## PERIPHERALS &amp; SUBSYSTEMS

|   |                      |       |        |        |       |
|---|----------------------|-------|--------|--------|-------|
| N | ADDRESSOGRAPH-MULT   | 9-34  | 9 7/8  | 0      | 0.0   |
| N | ADVANCED MEMORY SYS  | 4-23  | 5 1/2  | +1/2   | +10.0 |
| N | AMPEX CORP           | 3-7   | 4 1/4  | 0      | 0.0   |
| N | ANDERSON JACOBSON    | 2-8   | 2 3/4  | +1/2   | +22.2 |
| N | BEHNE MEDICAL ELEC   | 4-10  | 5 1/2  | 0      | 0.0   |
| A | ROLL-HERANEK & NEW   | 4-12  | 8      | +3/8   | +4.9  |
| N | RUNKER-PAMO          | 4-18  | 6 7/8  | +3/8   | +5.7  |
| A | CALCOMP              | 4-16  | 8 1/2  | -3/8   | -4.2  |
| N | CAMBRIDGE MEMOPIES   | 8-17  | 13     | +1/2   | +4.0  |
| N | CENTRONICS DATA COMP | 13-38 | 17 1/2 | -1 1/2 | -7.8  |
| N | CODEX CORP           | 4-19  | 10 1/2 | -1/2   | -4.5  |
| N | CORBITRONICS         | 1-3   | 7/8    | 0      | 0.0   |

| E<br>X<br>C<br>H | 1973-74<br>RANGE<br>(1) | CLOSE<br>FEB 14<br>1974 | PRICE                   |              | WEEK<br>NET<br>CHNG | WEEK<br>PCT<br>CHNG |
|------------------|-------------------------|-------------------------|-------------------------|--------------|---------------------|---------------------|
|                  |                         |                         | 1973-74<br>RANGE<br>(1) | 1974<br>CHNG |                     |                     |

|   |                      |       |        |        |       |
|---|----------------------|-------|--------|--------|-------|
| O | COMPUTER COMMUN.     | 1-4   | 5/8    | -3/8   | -37.5 |
| A | COMPUTER EQUIPMENT   | 1-3   | 1 5/8  | 0      | 0.0   |
| O | COMPUTER MACHINERY   | 4-13  | 4 1/2  | -3/8   | -7.6  |
| O | COMPUTER TRANSCIVER  | 1-6   | 1 3/8  | -1/4   | -15.3 |
| N | CONRAD CORP          | 13-32 | 15     | +3/8   | +2.5  |
| O | DATA ACCESS SYSTEMS  | 1-3   | 1 3/4  | 0      | 0.0   |
| O | DATA 100             | 9-19  | 9 5/8  | +1/4   | +2.6  |
| A | DATA PRODUCTS CORP   | 2-5   | 3 5/8  | 0      | 0.0   |
| O | DATA RECOGNITION     | 2-3   | 1 1/4  | 0      | 0.0   |
| O | DATA TECHNOLOGY      | 1-5   | 2 3/4  | -1/8   | -4.3  |
| O | DECISION DATA COMPUT | 6-40  | 9 1/2  | -1/4   | -2.5  |
| O | DELTA DATA SYSTEMS   | 1-1   | 1      | +3/8   | +30.0 |
| O | DELTA CONTROLS       | 1-4   | 1 1/4  | -1/4   | -16.6 |
| N | ELECTRONIC M & M     | 3-6   | 3 3/4  | -1/8   | -3.2  |
| O | EMPI-TEK             | 2-5   | 2 5/8  | 0      | 0.0   |
| O | GENERAL COMPUTER SYS | 3-9   | 3      | 0      | 0.0   |
| N | GENERAL ELECTRIC     | 54-76 | 54 1/4 | -2 3/8 | -4.1  |
| N | HAZELTINE CORP       | 4-2   | 5      | -3/4   | -13.0 |
| N | INFORMIX INC         | 3-23  | 3 1/4  | -5/8   | -16.1 |
| O | INFORMATION DISPLAYS | 1-2   | 3/4    | 0      | 0.0   |
| O | INFORMATION INTL INC | 8-15  | 10     | -3/4   | -6.9  |
| A | INDRY ELECTRONICS    | 3-9   | 2 7/8  | 0      | 0.0   |
| O | MANAGEMENT ASSIST    | 1-1   | 3/4    | 0      | 0.0   |
| N | MEMOPHY              | 2-19  | 3 5/8  | 0      | 0.0   |
| A | MILGO ELECTRONICS    | 14-28 | 14 1/2 | -1/2   | -3.3  |
| N | MONMAY DATA SCI      | 2-17  | 3 1/8  | -3/8   | -10.7 |
| O | ODER COMPUTER SYST.  | 2-8   | 2      | -1/4   | -11.1 |
| O | OPTICAL SCANNING     | 2-9   | 3 1/2  | 0      | 0.0   |
| O | PERITE CORP          | 3-9   | 4      | -1/4   | -5.8  |
| O | PHOTON               | 3-7   | 3 3/4  | 0      | 0.0   |
| A | POTTER INSTRUMENT    | 2-9   | 4 2/8  | +1/2   | +12.9 |





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